

AMERICAN



EACH CAN SAY



"I WAS A CLERK"



"I WAS A LINEMAN"



"I WAS A DRAFTSMAN"

THIRTY-SEVEN years ago, in 1904, the president of the American Telephone and Telegraph Company went to work as a clerk in one of the Bell System companies.

About that time, the 18 men who are now the presidents of the Bell telephone companies were starting their careers. For, like the head of the System, they have

worked many years in the business — an average of 38 years each. Each of them can say: "I was a clerk," "I was a lineman," "I was a draftsman"— and so on.

The "know how" is here — for the every-day job of running the telephone business or to serve you in emergency. Up-from-the-ranks management is doubly important these days.



THE BELL SYSTEM IS DOING ITS PART IN
THE COUNTRY'S PROGRAM OF NATIONAL
DEFENSE.

AMERICAN FORESTS

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THE AMERICAN FORESTRY ASSOCIATION

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The American Forestry Association is a citizens' organization for the advancement of intelligent management and use of the country's forests and related resources of soil, water, wildlife and outdoor recreation.

Its educational activities seek to bring about a better appreciation and handling of these resources, whether publicly or privately owned, that they may contribute in the highest degree to the welfare of the nation and its people.

In addition to publication of two magazines — AMERICAN FORESTS and CONSERVATION, both designed to keep before the people of the country important conservation questions and issues, the Association carries on educational projects in various fields including forest fire prevention, reforestation, protection of fish and wildlife, upstream flood control, prevention of soil erosion, preservation of wilderness areas, establishment of national forests and parks, development of forestry by private endeavor, the teaching of conservation in the schools of the country, promotion of research in timber growing and use and expansion of markets for forest products.

The Association is independent. It has no connection with any federal or state governments. It is non-political and non-commercial. All its resources and income are devoted to the advancement of conservation. It has been so operated since its founding in 1875. All citizens interested in forestry and conservation are eligible for membership.

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BIG TREES

The American Forestry Association is sponsoring a national hunt for the discovery and preservation of the largest specimens of the different species of typical American trees. Locate, measure and nominate your candidates in this competition. ACT NOW to make known and save the largest specimens of America's trees. For further details, see page 412 of the September issue or send for special announcement of this Big Tree hunt. Mail your nominations with records and pictures to The American Forestry Association, 919 17th Street, Northwest, Washington, D. C.

LOUISIANA'S MONARCH PECAN



DOWN in the sunny Southland, this mammoth pecan spreads its benign arms 145 feet and rises to a height of 135 feet in Assumption Parish, Louisiana, about four miles south of the famous Belle Grove plantation home, which was built in 1857. Sam Mims, of the State Planning Commission at Baton Rouge, proudly nominates it in the Big Tree Hunt as the largest pecan in the world.

Steamboat pilots, long before the days of Mark Twain, used this old tree as a landmark. One of those old river packets would be required to haul away all the nuts this tree has borne during its life. The owner estimates that it has produced upwards of fifty thousand pounds. During all these years it hasn't failed to grow, as its girth of 24 feet and eight inches at breast height indicates. At waist height it is 26 feet and ten inches in circumference.

It is located on what was once a part of the noted Germania Plantation. This plantation was subdivided a number of years ago, and the part on which the great pecan is growing is now owned by Mrs. L. R. Jaubert, of Hohen Solm, Louisiana.



The Assumption Parish Pecan

Forville Winans

A BREAK THAT WON'T GIVE FIRE "A BREAK"!

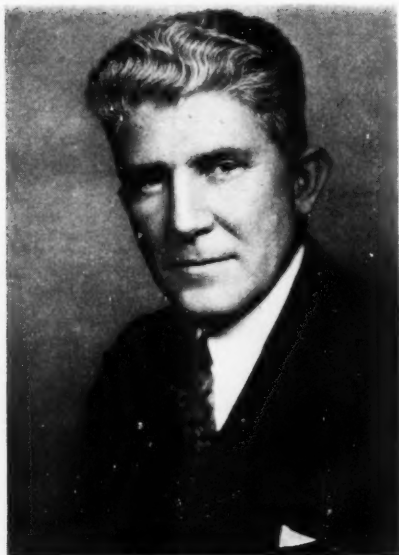
A swath of raw earth as wide as this won't give fire much chance to spread . . . can often bring it to a dead stop in its path! Yet fire-breaks as effective as this can only be quickly and economically built with an implement as heavy as this. And, as the Forest Service knows from experience, it can depend on "Caterpillar" Diesel Tractors to supply *sure moving power* — at low cost — for its heavy fire-fighting and fire-prevention tools!

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L. F. LIVINGSTON

ELECTED to the Board in 1940, "Larry" Livingston, one of the foremost agricultural engineers in the United States, now directs the work of the agricultural extension division of the DuPont Company, at Wilmington. An indefatigable worker, and believing wholly in the value of research in developing the use by industry of agricultural and forest products, he delivered, during 1940, over two hundred talks before agricultural, forestry, civic, club and college groups on this subject in twenty-four states. And he is going on with this work in 1941.

Mr. Livingston was born in Columbus, Ohio. When a boy, his family moved to Seattle, Washington, and he boasts that one of his first jobs was that of a "whistle punk" in a log-

OUR DIRECTORS

ging camp. Any old-timer knows that a whistle punk is the lad who handles the whistle wire, signalling the men operating the donkey engine, and it is easy to understand the youngster's pride in this assignment. As he grew older, he stuck at jobs in the logging woods, earning the money to take him through the University of Washington. His proudest memory is of his ability to hold his own as a swamper, cutting brush and timber on a logging railroad right-of-way, and being able to "swing a four-pound double-bitted swamper's ax for ten hours—without caving." His first experience with dynamite was in clearing logging railroad rights-of-way in the Pacific Northwest, where the loads were figured by the half-case rather than by the stick. He also had plenty of experience fighting forest fires not only in this area but in the Upper Peninsula—when he was in Michigan—where the idea was developed of shooting holes in swampy ground in order to make a quick well as a source of water for portable pumps.

Majoring in engineering, he was graduated from the University of Washington and put in charge of land clearing projects at the University of Wisconsin, which work he left to join the 22nd Engineers in the American Expeditionary Force in the World War. Later, in 1921, he joined the staff of Michigan State College as head of agricultural engineering extension work and remained there until 1929, when he took up his present work with DuPont.

A member of the American Society of Agricultural Engineers for eighteen years, he was, in 1936, President of that organization. He is a member of the Committee on Agricultural Cooperation of the National Association of Manufacturers; has served on various committees of the Farm Chemurgic Council; he was formerly a Vice-President of the American Forestry Association, and has been active in promoting the establishment of college courses in the use of explosives. He is regarded as one of the leading authorities in the United States on the use of explosives in land clearing, and for drainage, soil erosion control and other agricultural purposes.

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March 1941 marks the fiftieth anniversary of a great event in American conservation. It was the bursting into life of a seed planted on Capitol Hill in Washington during the 1880's. The resulting seedling was a single sentence inserted in a bill passed by Congress on March 3, 1891 to repeal the Timber Culture Act. The sentence provided

"that the President of the United States may from time to time set apart and reserve in any state or territory having public lands bearing forests" any part of such lands as forest reservations. This act marked the birth of our present system of national forests and the real beginning of conservation in America.

The American Forestry Association played a leading part in getting that sentence inserted in the act. It was accomplished only after years of persistent effort to have Congress recognize the importance of conserving our forests. Within two months after passage of the act President Harrison created the first public land forest reserve in Wyoming—represented today by the Teton National Forest and the Teton National Park.

During the intervening years that legislative seedling of 1891 has cast its seed far and wide over the land until now there are 160 national forests east and west, embracing 175,000,000 acres. In addition there have been created from areas first established as national forests fifteen national parks in whole or in part and forty national monuments. The American Forestry Association salutes the act of March 3, 1891. It is proud to have had a part in its passage.

* * * * *

Forest destruction is an inevitable corollary of war. In our own present case of merely preparing against war, the Government's program of purchases already calls for an amount of lumber that would load a train of cars 600 miles in length and would reach almost from Baltimore to Chicago.

The National Defense Council estimates that for every soldier, the war machine will need 1,500 feet of lumber. Assuming an army of two million men by 1942, that means a war levy upon our forests of over three billion feet—enough lumber to build 150,000 average houses. Fortunately our forests can stand the levy without serious consequences. But suppose we become involved in the conflict and a long war follows. To what extent and in what manner may prolonged warfare affect our forest security?

The question of course is not answerable. One might better reflect upon it if in this country we had a clearer picture of what is happening in the way of forest destruction in war-torn Europe. Little information on the subject is available to us but some insight of conditions may be gained from a pamphlet entitled "The German Exploitation of Polish Forests" recently issued by the Polish Information Center of New York. According to this publication, the Nazis in 1939 ordered a one hundred per cent increase in forest cutting in Germany, Austria, the Sudetenland and Bohemia. In January of 1940 they turned to Poland and demanded within the year an amount of wood equal to two and one-half times the normal yearly cut. State Forests were taken over by the Germans; private forests were either sequestered or the owners allowed freedom of action subject to delivering the wood demanded.

"There is no question that German management had been mapped out in all details," the pamphlet concludes. "To say that it preserves the Polish forest borders on the tragicomic. On the contrary, the Nazis have here but one purpose—to get out of Poland the maximum of lumber, totally disregarding the needs of the occupied country as well as the future of the forests they are now exploiting with such scientific ruthlessness."

This reference serves to bring home to us in America not only the potentialities of forest destruction that lie in a long war but the vital importance of forests to national defense and the need of maintaining them in surplus abundance to meet all national contingencies.

Orin Rusten
Editor.



Photograph by Paul J. Stander

The stormy March has come at last,
With winds and clouds and changing skies;
I hear the rushing of the blast
That through the snowy valley flies.

—Bryant

THE FOREST OF PETER THE GREAT

By RICHARD D. STEVENS

IN THE Karelian Isthmus No-Man's Land over which Finnish and Russian armies recently battled so furiously, stands, or did stand, the Raivola Larch Forest, a historic old landmark of forestry. Although the sound of guns was stilled some months ago, the Isthmus still retains characteristics of a No-Man's Land. Little information has leaked out and it is still uncertain whether the age-old trees were felled by the shellfire used to blast out the tenacious Finns, or

whether military saws and axes bit deep into the growth of centuries in a vain attempt to bar the passage of Russia's armed might.

Even the forest-minded Finns under the leadership of erstwhile Premier Cajander—a man who was first a forester and secondly a statesman—knew from other experiences that in time of national stress military considerations bow to no others on this earth. Although Cajander, as a forester, had a keen interest in



From "LARKEN," by Gunnar Shotte—courtesy the Yale School of Forestry

The historic larch Forest of Raivola, started by Peter the Great on the Karelian Isthmus in 1728 when he made far-sighted plans for control of the Baltic Sea. Lost to sight for almost 150 years, it was rediscovered and eventually passed to Finland in 1920 by the Peace of Dorpat. Scene of some of the heaviest fighting in the recent Finnish-Russian War, the forest is again back in Russia. Efforts to learn its fate have thus far proved unsuccessful

the Raivola Larch Forest, it could well have been sacrificed with so much other life in the attempt to preserve Finland. To the Russians, the forest, although standing as a monument to their accession to the rank of European power, may well have been subordinated to their numerous military needs. The inscrutable Norns may simply have rewoven the old pattern of nationality of the Larch Forest or they may have called the pattern complete, broken the life thread and cast it away.

Controversies and even wars have raged around the trees since their establishment, but none has had the possibilities for destruction and devastation of the last conflict which the trees, in their old age, were forced to witness. Storms have depleted the ranks of the old veterans but no storm can unleash the fury developed by man when he turns his hand to war. For over 200 years these trees have battled the elements with considerable success but they would be powerless against the military needs of man.

The Forest lies on the Karelian Isthmus not far from the former Russian border in the Parish of Uusikirkko, several miles southwest of Raivola Railroad Station. A more dangerous location for a research forest can scarcely be imagined. Railroads are always military objectives and the whole Isthmus may well have been laid low, as it is here that the fiercest fighting of the war took place.

The Larch Forest of Raivola appears in its own right to be a symbol of control of the Baltic Sea. Its very beginning as well as its constant shifts of ownership signified a growing or declining Baltic power. For many years the site of the forest belonged to Sweden and during that time Sweden was a mighty nation. After Russia, under Peter the Great, wrested it from her, Sweden lost her prestige and has never again owned the Forest or attained her former position as a world power.

Peter the Great was a man of wide interests and was not without talent and vision in many fields, but above all he excelled as a master mariner and shipbuilder. Much of his early training and experience with ships occurred in and out of Archangel in north Russia. He learned shipbuilding in the yards of that city and gained his sea experience as a common seaman and master sailing out of that port. The indirect causes for the establishment of the Raivola Forest can be traced back to an eventful voyage out of Archangel when a storm nearly cost Peter his life. It became apparent to him that in sailing from Archangel, ships must travel for many days over desolate and dangerous waters before they arrived in the world's maritime routes. Ships became exhausted and spent before the captains could lay their courses for world markets or for naval objectives. Peter immediately looked about for a remedy to this situation.

It did not take all of his vision to see that control of the Baltic Sea and its ports was absolutely essential in his plan for the development of Russia's maritime power. So Peter in his youth resolved to "open the window to Europe"; but he bided his time well, since Sweden owned the shores of the Baltic and was too powerful to be attacked by disorganized Russia. The time came when Sweden was at war with other powers; the moment that Peter had anxiously awaited at last arrived. Even then a long war ensued, but the resulting victory established Russia as a European power by giving her control of the east coast of the Baltic and of the Gulf of Finland.

Peter wasted no time in expanding his naval power.

At Kronstadt, on the east end of the Gulf of Finland, he established shipbuilding yards and a naval base. He located these in a position to give his fleets easy access to Europe but he had overlooked one all-important point. The prime shipbuilding material, Siberian larch, which was everywhere accessible around Archangel, remained accessible in Archangel—but not at Kronstadt. Peter decided that the mountain must come to Mahomet, called in his foresters and instructed them to move the forest down from Archangel.

It is a habit with foresters quietly to set about any task presented to them, from raising shelterbelts to feeding cattle, and so they laid their plans. The death of Peter did not seriously interfere with the wheels which he had set in motion, and experimental plantings of Siberian larch were established at Raivola in the vicinity of Kronstadt, in May, 1738, soon after Peter's death. It is an interesting sidelight on Russia that in 1827 another Czar, still interested in naval bases, sent to America and obtained live oak acorns to plant in Crimea for future ship timber. The acorns came from our own Santa Rosa Island, off Pensacola, Florida, which President John Quincy Adams, in his concern over the rapid depletion of ship timber, set aside as a naval reserve.

In charge of the technical work of gathering the larch seed from the general region of Archangel and planting it at Raivola was the German forester Fockel, who was then working for the Russian State. The present generation of foresters is indebted to Herr Fockel for a detailed description of the origin of the forest. This work, "The Forests of North Russia," published in 1766, is still in existence in Russian Archives.

Fockel's first work was, of course, gathering the larch seed from north Russia and experimenting to see what it would do in the far different conditions of the Karelian Isthmus. The tall, straight, splendid trees which have resulted may confound overly pedantic students of provenance and seed origin, since according to theory the chances were overwhelmingly large that only crooked, scrubby trees would be produced from this northern seed planted in the south.

The first stand was established by direct sowing of the seed. A part of the land on which the seed was sowed was reclaimed sedgeland, a part had borne a crop of grain the preceding year, another part grass while yet another was covered with alder and birch bushes. On the first three areas the soil was cultivated, and the seed sowed broadcast and harrowed in. On the brush land the bushes and roots were pulled and burned and alternate strips, two feet wide, were plowed with the intervening two foot strip left untouched. The seed was sowed in the furrows.

The next year, 1739, a part of the seedlings resulting from the broadcast sowing were lifted and transplanted on other areas. These trees were planted at intervals of about thirteen feet in rows thirteen feet apart. This, of course, makes this part of the forest the same age as the original planting, 202 years in 1940. This age class now comprises about twelve acres and occupies practically the same amount of area as when originally planted, since only on the very moist sites did any mortality occur.

The greater part of the Raivola Larch Forest occupies about thirty acres and is 170 years old, dating from 1770. No description of the original planting has been found but the spacing is about 13 x 13 feet, with the rows very carefully laid out. The stands lie on both sides of what is known as Lintulan Brook.

Altogether there were before the war about forty-five acres of pure larch and eight acres of mixed forest in which larch predominated. Over much of the remaining forest there occurred isolated larch trees arising almost without exception from natural seeding. The age of these isolated trees varied from thirty to one hundred fifty years. Even in private forests adjoining the tract, large trees were to be found scattered here and there up to distances of one and a quarter miles from the original larch stand.

When the so-called "Old Finland," made up of the east part of Viborg (Viipuri) Province, united with the remainder of Finland in 1812, Russia still retained Raivola. Although the forest never was developed to the extent called for in Peter's plans, administration was retained under the Russian Department of Forests for the Fleet, while supervision was under the crown sheriff of the Ranta District. The actual forestry work was, of course, in the hands of one or two forest rangers of the department.

For this reason it was not strange then that within Russian forestry circles the Larch Forest seems to have been unknown up to 1869 when A. C. Blomquist, an instructor at the Evis Forest Institute, "discovered" it. He communicated about it with the Russian Forest Service and the Forest Institute at Petersburg. Blomquist published several descriptions of the Forest and it gained the attention of other Russian writers.

As the Forest became more renowned, trouble arose between the nearly autonomous Grand Duchy of Finland and the State of Russia over its administration. Unlike the present day practices of civilization, an attempt was made to settle the affair amicably and the domain minister of Russia, in 1886, asked Finland if she wished to purchase the area. Finland did, and the Finnish Forest Service cruised the area and suggested a stumpage price of about one dollar a tree for the 8,700 large trees comprising the stand. This apparently was not agreeable to Russia, so she withdrew the offer to sell and the administration continued in the hands of the Russian State until 1892, when it was turned over to the Russian Forest Service and administered by the nearest district of that department.

The Peace of Dorpat in 1920 established new Finnish-Russian boundaries and the Raivola Larch Forest came into possession of Finland. It was temporarily united with the Raja Brook District, to be placed permanently, two years later, in the newly established Ayapaa District. This same year the Finnish agricultural minister turned it over to the Forestry Research Institute as an experimental area. The area was later enlarged to about 13,500 acres by the addition of the Ikola



PETER THE GREAT

Whose Swedish wars resulted victoriously and established Russia as a European power, with control of the east coast of the Baltic and the Gulf of Finland

Lake Crown Park and a part of the Lintula Crown Park.

The Raivola Larch Forest lies on the border of the Middle Russian Oak Zone, the Fennoscandia Coniferous Zone and the Fennoscandia Oak Zone. The temperature ranges from 95 degrees to 40 degrees below zero, averaging about 38 degrees F. for the year. The rainfall is fairly well distributed throughout the year and averages about twenty-five inches annually. An indication of the length of the season is gained by the fact that the broadleaved trees bear their leaves an average of 141 days. The area is about 155 feet above sea level and, like the rest of the Karelian Isthmus, was covered by loose layers of earth during earlier geologic periods. Growth is fairly rapid in spite of the fact that an impervious layer exists beneath much of the surface soil, causing the trees to produce flat horizontal root systems.

The Larch Forest itself appears to have developed without any special silvicultural care. There have been no thinnings or weedings in either the larch and native stands; all cutting has been limited to salvage of dead and wind-thrown trees.

A 1903 cruise of the stands of pure larch showed that there were 6,607 stems with a volume of 10,632 cubic meters. Eighteen years later, (Continuing on page 144)

IS THE PASSENGER PIGEON STILL ALIVE?

By CHARLES NEWTON ELLIOTT

TIME and time again we come back to the senseless exploitation of the resources in early America. This chapter in the history of our nation is one we cannot easily forget. During those times the vast natural wealth of our forests was squandered. Furs, minerals and soil went into the melting pot of waste and greed and quick, easy wealth. They served the pleasure of individuals, at the expense of a people.

During those years many species of mammals and birds became extinct or practically extinct. The American bison herds were whittled down to pitiful numbers. The laborador duck, heath hen and great auk were among those which joined the list of vanished Americans; but perhaps the most pitiable story of all was the story of the passenger pigeon. It has been told often and bitterly by those who realize how useless slaughter eliminated every single individual of the species.

It was said that in the Mississippi Valley and the central Lake States large factories were erected for the sole purpose of packing and shipping pigeons to the markets of the East and North where they were sold for a few cents a dozen. The birds were secured during nesting season when huge trees, filled with their nests, were chopped down, the parent birds shot and the squabs salvaged from the nests. One interesting record tells how, in 1881, more than 20,000 passenger pigeons were killed in a trap shooting tournament sponsored by the New York Association for the Protection of Game and Fish. The story of the passenger pigeon is said to have ended on September 1, 1914, in the Cincinnati Zoological Park where the last bird died.

Just at this time I have a dim ray of hope that the passenger pigeon might possibly come back out of the Stygian past. Recently a number of incidents have occurred which may or may not justify this fervent wish of mine that not all those grand birds were exterminated from the face of the earth.

The first of those incidents came during the latter part of the summer of 1940. I had slipped away from the office for two days of trout fishing on Dick Creek, one of the branches of the Chatstee River which flows out of the Chattahoochee National

Forest. I drove over the winding road up-river to the wildlife ranger station.

Robert, the ranger's boy, who is my fishing partner on Dick Creek, was waiting for me. He is only twelve years old, but during those dozen seasons of the equinox through which he has lived, he followed in the footsteps of his ranger dad. He is one of the most competent young woodsmen I know. He has given names to all the big trout in the pools along the creek, and he knows the songs of the birds. By the language of signs and tracks and sounds of the forest, Robert has taught me many valuable lessons in woodcraft.

This morning we were on our way up the long, picturesque trail to the headwaters of Dick Creek. I stopped to rest, and Robert squatted on his heels, either stoic or patient with my infirmities—I could not decide which. Anyway, I had hardly settled on a log when a tiny brown bird darted out of a brush heap and dived across the trail into a laurel thicket.

"A winter wren," Robert mused, half to himself. "He oughter be back yonder on old Bald, raising his family."

I knew that Enotah Bald, highest point in Georgia, was the only place in the state the winter wren was known to nest. But I did not know Robert knew it. I asked questions about other birds.

"There used to be some wild pigeons," Robert said, "that raised every year in the big cove at the head of Dick Creek."

"Yes, I know," I replied. "Uncle Jep Southern told me that when he was a boy he went up Dick Creek with his father and brothers and killed pigeons on the roost at night with sticks. He always brought home burlap sacks filled with the birds."

"He told me about that too," said Robert. "But I saw these birds myself. They were wild pigeons. They made nests out of sticks in the trees."

A little chill invaded my spine. "Were they up there this spring?" I finally asked.

Robert had not seen the birds in two years, but he promised to watch for them the next spring and call me if they came back to the cove.

The big trout were striking that

In presenting this article the Editors of AMERICAN FORESTS are fully aware that for the past fifteen or twenty years similar reports of the existence of passenger pigeons in remote areas have proven fruitless upon investigation. They are also aware of the fact that so far as it is known the passenger pigeon never did nest in Georgia, although the state was in the winter range of the bird. Nevertheless, the circumstances surrounding the reports that have come to the attention of Mr. Elliott, who until recently was acting commissioner of the Georgia State Department of Natural Resources, are, to say the least, of more than ordinary interest. It is believed that what Mr. Elliott says will be of real interest to conservationists.

day but my luck was poor. I craned my neck to watch every bird that flew across the creek.

Less than a month after my visit with Robert, Jim Dykes, a farmer from Montezuma, Georgia, dropped into my office for a few minutes. He told me that during the previous autumn, he was in his fields one morning shortly after the first light of dawn. He was startled by a whistle of wings, and, glancing up, saw at least two dozen birds swing close to his head and circle to a pea field a hundred yards away. His first fleeting glance labeled the birds as doves, then he knew that they were not. They were too large and did not fly quite like doves. He walked toward the field into which the birds had settled and suddenly they were gone, on powerful wings, like ghosts into the early dawn.

Jim Dykes knew the birds were pigeons, but they were not tame pigeons. His most vivid impressions were their swiftness of flight, their slate-gray appearance and the fact that all the birds looked exactly alike.

A few days ago Ranger E. L. Scott, of the Georgia Division of Wildlife, told me that last winter he found six wild pigeons in Brier Creek Swamp, below Augusta, Georgia. He was standing in the swamp when the birds settled in a large tree almost over his head. He stood quietly and studied them for almost ten minutes.

I suggested that perhaps he had seen some tame pigeons from a nearby farmhouse. His answer was emphatic. He knew all the breeds of pigeons. Those birds resembled doves, but they were almost twice as large, and even had black spots on their wings. They flew like pigeons, but they were certainly not tame pigeons.

Twenty-six years have passed since the last passenger pigeon was seen alive. It does not seem probable that the large number of ornithologists could have missed this grand bird if any had remained alive over that period of time. But it is possible. If you remember, the ivory-billed woodpecker dropped out of sight for a while. Then stories were published in *AMERICAN FORESTS* indicating that these birds might not be extinct. Those stories started a search which had its climax in a Louisiana forest where the birds were re-discovered by a young naturalist. For months preceding the finding of the ivory-bill, I combed the swamps of Georgia looking for a specimen of this rare bird. I have also followed many other leads in an attempt to re-discover some rare or vanished species. But the great



The beautiful figure of the Passenger Pigeon (*Columba migratoria*), as drawn by Louis Agassiz Fournes. The extinction of this bird is a pitiable story and a shameful blot on the escutcheon of American wildlife

majority of these attempts have ended in failure. The passenger pigeons seen by Robert and Jim Dykes and Ranger Scott may prove to be some species of tame pigeon gone wild or some other bird which in the dim light, resembles the passenger pigeon.

We hope not. What a grand discovery someone would make if he found the passenger pigeon alive. What a marvelous new day in conservation if our skies were again filled with great flights of those birds, winging their way down the heavens, blotting out the sun with swiftly moving gray flocks in migration. On that day America would be in her new era of conservation—on the road to reclaiming that rich heritage which once, in the long ago, was hers.



CINDERELLA BOULEVARDS

By JULIETTA K. ARTHUR

JUST off Fifth Avenue, in front of New York's Medical Arts Building, there is a tree which has its roots set in an abandoned morgue. Fifty feet further along another tree is planted in an erstwhile ice-box. When the Hotel Moritz with great pomp and ceremony planted huge plane trees facing Central Park on West 57th Street last spring, workmen had to dig through the "Chauve Souris," the basement night club of pre-World War days, cut away a cellar wall and run steel columns down to bed rock to anchor the beams which support each pit.

For the past two years these and other complex subterranean upheavals have marked almost incredible feats of city forestry in the canyons of Manhattan, climaxing this year in several hundred trees which are taking the place of steel girders of the elevated railroad which formerly marred Sixth Avenue, New York's "Cinderella Boulevard."

Up to four years ago there was a notion prevalent in Manhattan that trees would not grow in brick canyons impregnated with gasoline fumes. But energetic Park Commissioner Robert Moses has changed all that. New York trees now do not flourish only in front of small private dwellings; they thrive facing apartment houses, artificial masses of stone and concrete and towers of brick and steel. New York needs trees; their almost complete disappearance from streets was no doubt the natural result of rapid growth and the prime concern to make room for restless millions. Quite as important was the lack of knowledge of how to care for trees, once room was found to plant them in the midst of water pipes, telephone cables, subway tracks, gas mains, and the other details of New York's underground nervous system.

All the world knows that in the greatest transplanting operation ever undertaken, the choicest of full-grown trees from all parts of the United States moved in on trucks, railroad flat cars and sea-going barges to beautify the site of the World's Fair of 1939-40 in what was once the marshy meadows of Flushing. Tree scouts combed the country for perfect specimens, some of them weighing twenty-five tons, standing sixty feet high, carefully dug up and shipped on special tree trucks, with roots protected in huge balls of earth wrapped in burlap.

Many of these trees, particularly the smaller ones, along with thousands of perennial plants and shrubs, have since been moved. A number form a windbreak of sumac, wild olive, poplar, white birch, beech, plum and willow for the tree nursery on Riker's Island, until recently the nation's largest dump-heap.

Fifth Avenue—the aristocratic neighbor of "Cinderella Boulevard." Here, at Rockefeller Center, eight fine fifty-foot elms were planted in 1939—the only trees on the Avenue below Central Park—spanning the entire frontage from Forty-ninth to Fifty-seventh Street, and stimulating planting elsewhere in the city. Right—Gardens in the Sky—the south border of the walled-in garden atop the Theatre at Rockefeller Center—beautiful flowers and trees, a bit of the country high in the heart of the city

On this island in the East River, adjacent to La Guardia airport, some 3,500 short-term city prisoners are tending young trees—oriental planes, American elms and Norway maples, the varieties approved for street-tree planting in the five boroughs.

Ever since 1936 the Park Department under Mr. Moses fought to have this 200-foot high island garbage pile turned into a nursery which would supply the 12,500 shade trees needed annually for replacement in parks and streets of New York City. In October, 1940, the last of the refuse scows dumped its final load on Riker's Island. Now, on a site which for forty years has been New York's midden-heap, young trees are growing. In seven years they will be large enough to provide saplings for city use at prices lower than the current cost of purchases from private nurseries.

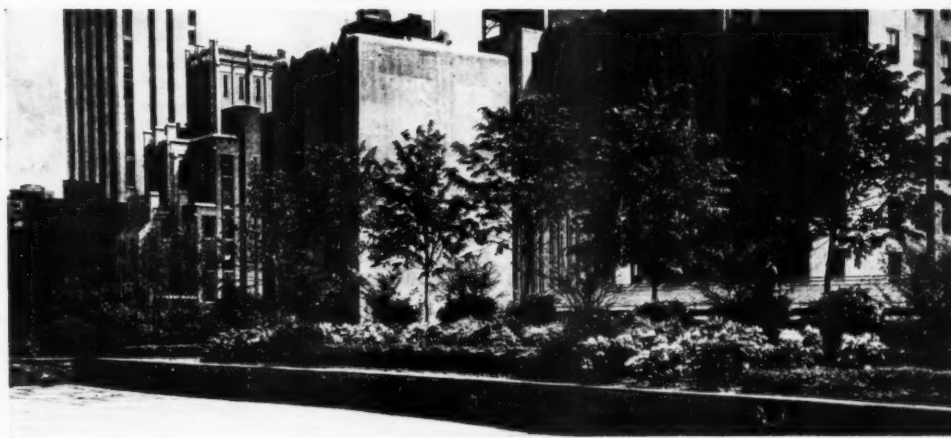
Meanwhile, prisoners, under the direction of four park arboriculturists, are turning under winter rye. It is planted in what will eventually be part of a fifty-acre nursery. Soil containing ashes, cinders, broken glass, iron and almost everything else from the kitchens of a whole generation of New York cooks becomes surprisingly fertile under proper treatment. Pipe lines have been installed for irrigating the trees. Green manure crops—rye, alfalfa, soy beans, probably followed by



The Mayor shovels dirt — LaGuardia, largely responsible with Park Commissioner Robert Moses and Anthony Grande for the planting enthusiasm which has infected the city, shovels on Sixth Avenue or "Cinderella Boulevard" — on which trees are being planted to replace the steel girders of the lately demolished famous Sixth Avenue "E!"



Typical of the underground conditions facing New York City's Park Department — subway structures, telephone cables, water mains and endless other major obstructions which make the planting hazardous but which in no wise daunt these tree-minded men, — determined to bring green beauty to the streets of the great metropolis



clover—will be turned under on another plot, twenty-five acres in extent, until the ground is suitable for planting more saplings.

This spring a new crop of prisoners will take up the task of watering and planting, putting in rye and vetch between the rows of young trees planted last fall, moving every other one so that instead of two and a half feet there will be five between them, set in ground already fertilized with bone meal and agricultural lime.

For generations New Yorkers ruthlessly uprooted their trees; today they are painstakingly putting them back, in a long-time program the results of which many of today's far-sighted citizens will never see.

At the 15th Annual Shade Tree Conference held in New York in 1939, Mayor Fiorello La Guardia declared: "New York has now two million trees in its five boroughs; if the policy started is continued by my successors, two decades from now will find this city dotted with shade trees."

This statement is a trifle optimistic; despite advances in the science of tree culture, city forestry is still a problem. In a metropolis like New York, the sheer magnitude of the question sometimes presents almost insurmountable difficulties. One storm, for example, can not only wipe out years of work, but almost deplete the park treasury. The ice and sleet of last March, for instance, cost the city \$300,000; from one to three years will be needed to remove, repair and replace the 100,000 trees felled or damaged in New York and adjacent suburban Westchester County.

But progress, despite the difficulties, has been made, with an amazing amount of interest displayed by men and women who all their lives have lived among brick and stone and concrete. The least variation in health of the eight mighty elms on Fifth Avenue fronting Rockefeller Centre is watched as anxiously as that of other monarchs.

When they were dug up at Knollwood Farm, at Port Chester, New York, and planted under floodlights on the west side of Fifth Avenue, these elms were the only trees in that section between Twelfth and Fifty-ninth Streets. Costing approximately \$1,000 each to transplant in 1939, they were one of the largest contributions of this kind made by a private property owner in New York City. Their planting was a major operation.

Engineers familiar with Rockefeller Centre, which purchased the trees, assured the Park Department, which supervised their planting, that no bedrock would be encountered in preparing the large pits. Utility companies were approached and it was found that only one abandoned telephone conduit existed in the area; if it were met by the workmen, it was agreed the cable was to be broken.

The actual placing of the trees, which were eighteen inches in diameter, required only a few minutes. To avoid disturbing traffic, one tree was planted at a time. When the first fifteen-ton elm was put into place, ambitious photographers and a milling throng of "sidewalk superintendents" watched twelve workmen set it in its pit, backfilled or lined with a mixture of topsoil and fertilizer. But a crowd of spectators jammed the sidewalks to such an extent that future plantings were made at midnight. Even then a dozen or more people stood around in the cold, with Nelson Rockefeller, president of Rockefeller Centre, to watch the operation.

By June the elms struck a lovely note of color against the gray buildings of Fifth Avenue, though they seemed diminutive enough against the background of soaring skyscrapers. Old as the average man when they were transplanted from their suburban home, they still did

not give the impression of age. By July all of the trees with the exception of one, later replaced, had put on fine new growth.

It was this Fifth Avenue planting, with the softening effect of foliage that makes homelike and hospitable even so great a city as New York, which set the pace all over the city. The result has been that scores of fifteen-foot oriental planes, the average purchase and planting cost of which is \$50, have been bought by proud apartment dwellers and set out with the benevolent approval of the Park Department.

In the past twelve months 174 shade trees have been planted in Rockefeller Centre. All are oriental planes with the exception of eight Norway maples in front of the famous Prometheus Fountain. Young trees from fifteen to twenty feet high were even planted on the rooftops at varying levels of the Centre, a modern version of ancient Babylon's airy gardens and shaded roof walks.

Meanwhile, Major Edward Bowes of radio fame made a magnificent gift to St. Patrick's Cathedral. Facing the eight stately elms of Rockefeller Centre are four English counterparts, flanked by eleven thirty-foot Schwedleri maples. These maples, noted for characteristic changing of color from deep red in spring, dark green in summer and a return to red or purple in autumn, make a striking color note against the Cathedral, which is a landmark of New York and a world-famous architectural edifice.

Of especial interest to tree-growers was the means used here to check evaporation. Each tree was sprayed by the Park Department with latex, a milky material which quickly oxidizes and forms a thin, rubbery film that is sufficiently porous to allow the bark to breathe. Anyone can apply it with an ordinary hand-spray and the substance is considerably less unsightly than the burlap ordinarily wrapped around trunks and larger limbs of transplanted trees.

But the most incredible feat now being carried on in New York centers around the current attempt of business men, members of the Sixth Avenue Association, to turn Manhattan's "forgotten boulevard," until recently the home of a noisy elevated railroad, into a tree-lined street which will have something of the glamour of its neighboring Fifth Avenue.

The first consignment of trees which will eventually adorn approximately five miles of the avenue was set in place in March, 1940, with appropriate ceremonies, including the use of a silver shovel. But beneath the street surface technical operations preceded the planting of those thirty-five-foot oriental planes which could never have been accomplished with a silver-plated scoop. For every one of those first six trees a reinforced concrete pit had to be sunk to hold the root ball and to keep roots from wandering dangerously among cables and wires. Once the pits were in place, each was filled with twenty-five tons of earth treated with commercial fertilizer.

According to William J. Anderson, president of Horticulture, Inc., whose technicians did the work, "the earth is fortified by fertilizer containing organic and inorganic ingredients, giving the soil the three major elements of nitrogen, phosphorus and potash. Membrane and integral types of water-proofing are used. Drains constructed in the bottom of the pits lead into a sewer main. The surface growth is treated with a synthetic film to control dehydration. By a new method, pressure feeding and watering of the trees are done through the supporting standard."

From an ugly, roaring El-scarred thoroughfare to a tree-bordered boulevard is a transition that takes imagination. The total cost is (Continuing on page 142)



Forestry in America, the author asserts, is demonstrating that it is no longer profitable to cut a forest clear—that it should be handled as a renewable resource. That is the crux of the Minnesota plan, which dates back forty years and involved the utilization and preservation of a great forest of White and Norway pine such as this which was reserved on the shores of Cass Lake for beauty and recreation

THE MINNESOTA PLAN

By H. H. CHAPMAN

Photographs by the U. S. Forest Service

THE PIONEER period in our national economy has passed. During this era vast areas of virgin timber were converted into farms and lumbering developed as a major industry to keep pace with the rapidly growing demand for wood and other forest products for farms, homes and factories. The destructive methods used in agriculture were carried into lumbering and resulted in semi-permanent damage to great areas of forest land otherwise capable of renewed growth.

In the maturing national economy it was this second phenomenon rather than agricultural clearings that produced a widespread reaction against forest destruction and an emotional urge to preserve for posterity as much of the remaining original forest and wilderness as could be snatched from the jaws of the devouring mills. This

urge, rather than the warnings of approaching timber famine, was directly responsible for the movement to create national and state parks and wilderness areas.

Between the lumbermen who sought to extract the last cent of profit from the timber, abandon the land and move on, and those who would put an end to timber cutting, there seemed to exist a gulf that could not be crossed. Each of the contending parties was sure of his facts and compromise seemed impossible. A forest area was either destroyed or it was saved. There was no middle ground! Or was there?

Today the battle rages with undiminished zeal on the part of the advocates of preservation. "No compromise" is still the watchword. Notable "victories" have been won recently in the far west, where great areas have

been added to national parks in the Olympic Peninsula of Washington, in the Kings River Canyon in California, with further extensions sought in the Cascades, the Colorado Rockies, New England and elsewhere. In the national forests, over fourteen million acres have been given a protected status as wilderness areas, but so great

ging and manufacture of wood products are changing their methods of cutting to leave the land productive and to encourage second crops of timber. It is no longer profitable on the whole to cut a forest clear. This change is due to many factors, including lower interest rates, exhaustion of opportunities for profitable investment

either in other forests or in other industries, and an increasing security against destruction of residual stands by fire, due to the development of public agencies of protection. Not the least of these influences is the increasing knowledge of forestry in America and the establishment of a professional body of trained men whose efforts are directed towards solving the numerous problems of treating timber as a renewable resource similar to farm crops. To the extent that they succeed, destructive logging operations will cease and the forests of America, constantly renewed, will be perpetuated not by segregation but by use; and thereby they will contribute to the economic strength we must have to meet the uncertain future now facing us. In forestry practice lies the middle ground between spoliation and segregation of our forest resources.

But forestry alone is not a final answer. It takes too long to replace the ancient trees that characterize portions of our original forests. Hence there is a real loss in values that even the best forestry practices cannot replace within the lifetime of this generation if ever, unless these areas are classified and set aside. It is here that the plan adopted in Minnesota years ago is worthy of notice. Foresters are responsible for the proposal and adoption of the plan. In its essentials, it rests upon principles which are easily verified by observation, and which can be formulated as follows:

The benefits to the recreationist, derived from preservation of virgin timber, arise from what he can see. What is beyond his vision is of no value to him except in his imagination, which pictures the continuance of the spectacle. The range of vision is limited, in forests, to a few hundred feet at most. Hence what one can enjoy is also limited to strips or areas of timber border-

ing lines of travel. Lines of travel for ninety-nine per cent or more of the public are confined to waterways, roads, and trails. The occasional person who penetrates the untamed forest and combats the underbrush and swamps which bar and impede his progress, is usually looking for game or engaged in estimating the timber. In moun-



On areas lumbered, the plan called for the piling and burning of tops and slash and leaving five per cent of the merchantable stand in a sufficient number of seed trees to ensure reproduction. Below—resultant rich young growth on a similar area under protection after logging



is the urge for absolute prohibition of timber cutting that apprehension still exists as to the inviolability of these areas.

Meanwhile the attitude and position of the lumberman has undergone a far-reaching economic change, and an increasing number of men and firms engaged in log-

tainous topography, the best scenery is above timber line. From a distance, forested slopes look as attractive if clothed with young trees as when occupied by older timber.

From these premises, Minnesota found a way to settle one of the earliest examples of this controversy in a manner which has remained satisfactory to all interests concerned for the past forty years. The case concerned the disposition of the virgin pine timber on four Indian reservations on the Upper Mississippi River, now known as the Chippewa National Forest. The Chippewa tribes had ceded this timber to the Federal Government to be sold and cut, the proceeds to go to the tribal fund. This was in 1890. During the next decade the Indians were robbed by various devices including the cutting of green timber under the pretense that it was dead and down, faulty estimates of volume, and collusion of bidders. The exposure of these scandals created sympathy for the Indians and brought increasing recognition of the irreplaceable grandeur of the groves of red or Norway pines and veteran white pines on the shores of Cass Lake within the reservations. A tremendous upsurge of public interest followed. As was to be expected, the demand was for a park and for total preservation of the area. The obstacles to such a consummation proved insurmountable. The timber was later proved to be worth over \$10,000,000, a sum no Congress would then appropriate, even if the State and its industries could have afforded to segregate the resource, which represented a final value in industry of from ten to twenty times its stumpage value.

This problem was solved by the passage of the so-called Morris Act of June 27, 1902, in which the following principles, first published by the author on January 17, 1902, in the *Mississippi Valley Lumberman*, were incorporated: (1) The preservation intact of the pine on the fractions of "forties" or lots bordering the shores of the large lakes, or wherever the esthetic value of the pine is so great considering the interests of the whole community as to offset its commercial value. (2) The opening of the reservation to settlement. (3) The exclusion from settlement of 100,000 acres known at present as pine lands and the preservation of the title to this land in the government.

This compromise received the support of the Federa-

tion of Women's Clubs and other supporters of the park plan, also the support of the lumbermen and the local community at Cass Lake. Ten sections of lake shore lots together with certain islands to a total of 10,000 acres were reserved for park purposes. On the



Reservation from cutting, however, does not necessarily assure the preservation of mature stands because they are subject to destruction from natural causes—as exemplified by the magnificent groves of Norway pine which were reserved for recreation, on the eastern shore of Cass Lake, and which were destroyed—as shown below—by the hurricane of July, 1940



remainder, five per cent of the mature lumber, by volume, was reserved as seed trees. The supervision of this forestry measure was given to the Chief of the Bureau of Forestry in the Department of Agriculture, and included proper disposal of (Continuing on page 143)

TO THE LAST LAKE

By NORMAN CLYDE



Looking up the South Fork of Big Pine Creek from my cabin to the Middle Palisade 13,000 feet high, I decided it was an excellent day for a ski trip to the lakes at the head of the North Fork. Here, in the foreground, at an elevation of about 8,000 feet, the trees are chiefly Jeffrey pine and California water birch

ON THE first of May storm clouds enveloped the Sierra in California. Falling snow extended downward from its crest to my cabin, at an elevation of 8,000 feet, snugly sheltered among the leafless birches, willows, cottonwoods, and an occasional towering Jeffrey pine.

On the following morning, however, when I looked northwestward up the canyon of the South Fork of Big Pine Creek, I saw that the loftiest, rugged peak of the Middle Palisade was without a cloud, and the whole sky was radiant blue.

"An excellent day for a ski trip to the lakes at the head of the North Fork," I reflected, kindling a fire preparatory to an early breakfast. By seven-thirty I

was on my way up the canyon. As I looked upward to the azure zenith a single cloud coursed across it. Probably more storm beyond the crest.

Up a sage-clad slope now free from snow I carried my skis. Then along a succession of cascades becoming sonorous from the melting of the snow to a second basin. This also being in part free from snow, I continued to carry my skis. Finally, after climbing a thousand feet of switchbacks, I came upon another basin.

The snow being continuous here, I changed from climbing to ski boots and adjusted my skis to them. Through an open stand of tall Jeffrey pines, then into a dense grove of lodgepole, followed by an opening surrounded by leafless aspens, I glided along over the snow



Starting off on a steady climb, I reached the first lake, climbing more than a thousand feet of switchbacks, then changing from climbing to ski boots, I glided on over the snow until I reached the second, — with the deeply fluted north face of Temple Crag rising to its highest pinnacle of 13,016 feet above the sea. The trees are whitebark pine, with occasional lodgepole

Back and forth across a thousand foot slope I tacked to reach the third lake, on up to the North Palisade—14,255 feet high, its summit veiled in swirling masses of cloud, to the fourth lake—seen in the foreground. Gliding on to the fifth, I zigzagged up 500 more feet to reach the sixth, in a heavy snow storm. And at timber line, I found the seventh,—the last of the group

which averaged about six feet in depth. Beyond this basin I climbed a steep pine-clad slope and then swung around a shoulder and along a strip of narrow but gently inclined canyon floor. Another ascent of a few hundred feet brought me to the first lake. Here in the snow, at an elevation of 10,000 feet, I observed a pair of bluebirds perched in a dead pine.

Through a pass-like opening immediately above this first lake I continued to the second. To my right the deeply fluted north face of Temple Crag rose to a serrated summit, its highest pinnacle 13,016 feet above the

sea. The sky overhead was still blue, but wind-torn clouds were being driven over the sharp crest to form in masses above the loftier peaks.

Beyond the second lake I passed through a long draw to the third. Above this a slope rose steeply for about a thousand feet. Back and forth I tacked up this, at times across a stream that cascaded many feet beneath. As I neared the upper end of the slope a crimson shafted woodpecker flew overhead into a grove of pines, and a chipmunk scurried across the snow from one great rock to another.

Above the slope I entered a small open valley. By this time the North Palisade, a superb peak 14,255 feet in elevation and several miles to the south, came into view. Its summit, however, was enveloped in swirling masses of clouds. As I continued across the valley and up a narrow ravine, snow began to fall.

Emerging from the upper end of the ravine, I glided out onto the fifth lake, and having traversed this, zig-zagged up a steep bluff nearly 500 feet high. After several hundred yards of swinging about over undulating terrain, sparsely clad with pine, I reached the sixth lake of the chain. By this time the snowfall

across an open space. Eventually shooting over a bank several feet in height, I landed on the lake with a sharp jolt.

The lake crossed, I began the descent of the ravine. Although the snow in this was from ten to twenty feet deep in places, the roof of the snow tunnel through which the stream had coursed during the winter was beginning to collapse, leaving well-like holes which it behooved me to avoid. "A nice one," I observed, swinging to a stop on the brink of one such hole, with the icy stream flowing across its bottom.

Following a devious course, I wound carefully in and



A lodge near timberline, at an elevation of 11,000 feet, perhaps the highest of its kind in the United States, and almost buried in snow. In the distance clouds are sweeping over the North Palisade and majestic Mount Sill

was heavy and a rather stiff wind was blowing.

The sixth lake behind me, I continued up over moderately steep inclinations to the seventh, the last of the group lying at timberline. The elevation here was 11,500 feet. A 13,000-foot mountain, a short distance to the west, was now almost completely shrouded by rolling vapor, and a violent wind drove the flying snow across the lake.

My objective gained, I swung around and shot down the first slope. Across the lake and down over the bluffs I continued, almost thrown for a "header" once upon hitting a patch of "sticky" snow. Gliding out from the pines, I darted obliquely downward through flying snow

out among the pines on the steep slope, as a layer of new snow peeled off the older one below it, causing me to side-slip down a steep bank for a disconcerting distance.

In an arrow-like "schuss" I shot from the ravine onto an open valley and,—the wind having by this time diminished somewhat, and the snow falling less densely,—I stopped by an open space on the stream for luncheon.

On my way again, I presently reached the brow of a thousand-foot slope. Although this was rather precipitous, there was plenty of space to tack back and forth in a series of linked turns, my speed being checked at each by a stemming or a Christiania swing. After descending a few hundred vertical feet, however, I swung

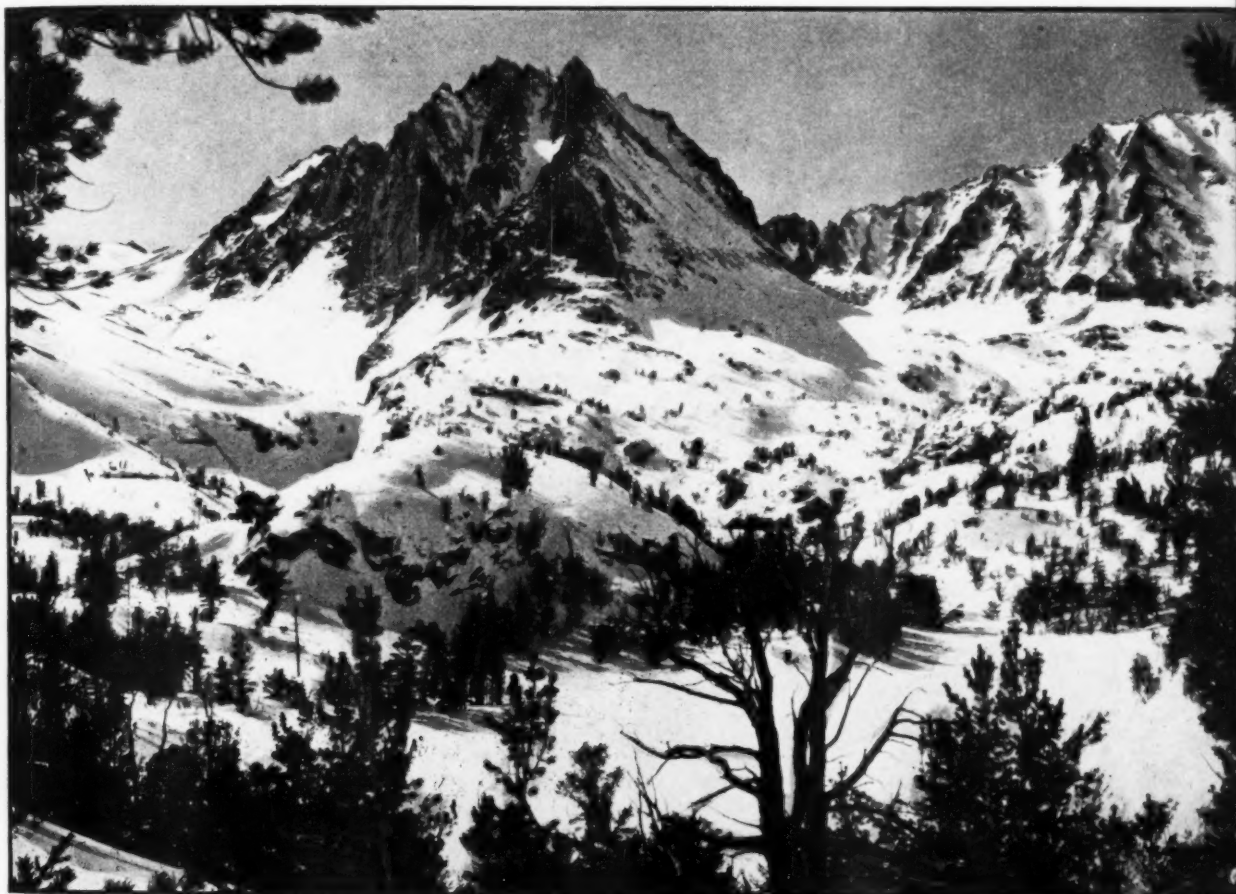
into a long diagonal, checking my speed occasionally by a short *Christiania* or "waggle tail," or sometimes on the steeper portions of the slope by a side-slip.

Reaching the foot of the slope, I crossed a lake and then darted down the long coulée below it and out onto another lake. Having traversed this, I swung around the upper end of the first one and thence northward into a long draw. For a half mile or more I shot rapidly down this and then crossed an almost level strip of canyon floor. Suddenly, however, I came to the head of a gorge a few hundred yards in length. Although the roof of the snow tunnel had collapsed in a number of places, I

Down an open slope and into a dense stand of lodgepole pines, across another opening and then through more pines, I shot along for perhaps a mile. After crossing the now continuously open stream on a log, I glided down a gentle inclination to the brink of a drop of a thousand feet.

In a steep zigzagging course I made my way down this for several hundred feet before launching on a half-mile diagonal run. Another swing brought me to the base of the slope and across the stream, there buried many feet beneath a snow slide.

Then down the gently inclining floor of the basin to



This is an unnamed peak, about 13,000 feet in elevation, with a frozen lake in the foreground. My objective gained,—I swung around and started back—a thrilling descent down what was practically a giant stairway, because of the precipitous character of the terrain, which challenged utmost skill

decided to go down it, narrow and steep as it was, rather than make a detour.

"I hope the roof does not give way beneath me," I reflected, as I shot down into the gorge. Then, "A good one!" as I looped around a thirty-foot hole. I sped along, sometimes gliding along the steep snow slopes on either side of the stream, at other times darting across the latter on none too stable snow bridges.

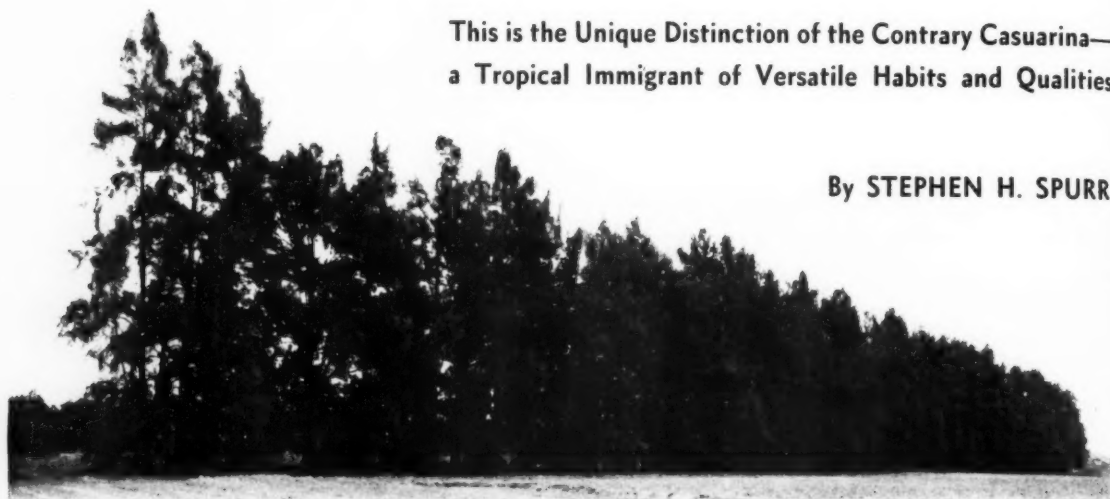
Reaching a strip on which the snow had not as yet collapsed, I made good time. Then another cavity. To avoid this I swerved to the crest of a rounded ridge, finally swinging back across the stream on a snow bridge.

the head of the first cascades passed during the morning, from which point I carried my skis down to my cabin. From the last lake at timberline I had made a varied and in many places thrilling ski run down what might almost be termed a gigantic stairway. This consisted of a series of basins or "treads," separated from one another by precipitous step-like rises, several of which were upwards of a thousand feet in height. From lakes buried deep in snow at the upper limit of the Hudsonian zone, I had swept down through this and the greater part of the Canadian zone, in which spring was already on the way.

THE PINE THAT ISN'T A PINE

This is the Unique Distinction of the Contrary *Casuarina*—
a Tropical Immigrant of Versatile Habits and Qualities

By STEPHEN H. SPURR



Australian pine as a windbreak on the truck farm of P. H. Britt, at Winter Garden, Florida — indicating the widespread use of the tree — which here shelters the farm from northerly winds and frost. These trees are probably less than twenty years old

Photographs by Stephen H. Spurr and T. P. Robinson

IMAGINE a tree that is a dead-ringer for a pine and yet is a hardwood; that is one of the fastest growing trees in the world and yet produces wood heavier and stronger than oak; that is at its best on windswept sea sands where few other plants can survive. Such a tree is the Australian pine, known scientifically as *Casuarina equisetifolia*. The tree, as well as the botanical order and family to which it belongs, takes its name from the famed Cassowary bird of Australia because of the fancied resemblance between the bird's plumage and the tree's foliage. Its specific name *equisetifolia* was given it because the "needles" closely simulate in appearance the common rushes or horsetails which belong to the order *Equisetaceae*. A commonly cultivated tree of peninsular Florida, the Australian pine is considered by many scientists to be one of the important trees of the future in that region.

This tree, so contrary in its habits and characteristics, is native over a wide area from Burma eastward through Malaya, the Dutch East Indies, Australia, and the Pacific Islands. Today, however, it has become established throughout India, northern South America, the West Indies, Florida, and parts of California. In fact, it grows practically anywhere in the tropics where there is sufficient rainfall.

Casuarina equisetifolia is known by a great many common names. Australian pine, the term which we use most often in the United States, is obviously a misnomer since the tree is far from being a pine nor does it come from Australia any more than it does from a score of other places. The Australians have many names for it, the commonest being "she-oak." It is called an oak because other trees of the same group and of similar

appearance have oak-like wood and the term has been applied to all the species of *Casuarina* both with and without the oak characteristics. The "she" part has nothing to do with sex but is a modification of the original "shee" and alludes to the peculiar sound made by the wind in the branches. In trade, the wood is known as Botany oak since the first shipments of it came from Botany Bay in Australia. Perhaps the most original English name as well as the one in widest use is beefwood. This name arises from the fact that the sap and the freshly cut wood are blood-red in color.

To the natives of the South Sea Islands, it is *Toa*, or "the warrior tree." There, it has mystic powers. If one stands in its shadow when the moon is full, the future is revealed to him through whispers emanating from nowhere. It is a tree of evil. Let one take a piece of its wood in a boat and contrary winds and storms will beset his trip. It is a tree of bravery. In the Marquesa Islands and Tahiti, the title "toa" is bestowed upon the leading warrior, the tree becoming his emblem. According to Tahitians, the tree sprang from the bodies of dead warriors, their hair turning into the foliage and their blood into the red sap.

As has been said, the Australian pine resembles superficially the pines. However, on closer inspection, it will be seen that the "needles" are in reality the twigs which have taken over the food-making functions of the leaves and are green with chlorophyll. The leaves themselves are barely visible to the naked eye and are whorled in groups of six to eight at intervals along the stem. The fruit also is pine-like in that it is a cone but instead of containing pine nuts, contains a great number of typical hardwood seeds. These seeds are minute and

equipped with wings three times the size of the seed itself. Being light, the seeds are easily distributed by the wind and being tough and long-lived, are often transported by water. The wide natural range of the tree through the Pacific Islands is attributed to seeds thrown on the island shores by the ocean.

Casuarina equisetifolia is primarily a beach tree. It is one of the few commercially important beach trees of the tropics. Wherever it is native, it commonly forms a single line or small groves a few yards from the high tide line with its roots penetrating the sands to the sea.

The tree, however, is not confined to the coast. It thrives inland growing along streams to elevations of over three thousand feet and on the Fiji Islands, Java, and elsewhere is actually the common tree on the grassy plains of the dry zones. Sand is the preferred soil but it seems not to thrive in other soils except heavy clays. It grows well on most Florida soils.

Although sensitive to the frost, it can stand temperatures several degrees below freezing. It grows throughout the peninsula of Florida but does best in the milder section from Tampa and Orlando south.

The Australian pine is one of the fastest growing hardwoods. On the Malay Peninsula, it has been known to grow an average of ten feet a year for the first seven years of its life; in Cuba and Florida, it may maintain this growth rate three years or more. Trees often attain a height of one hundred feet and a diameter of eighteen inches in less than twenty-five years, the maximum height being one hundred and fifty feet, the maximum diameter thirty-nine inches, and the maximum age well less than one hundred years. In Florida, it does not grow as large as in Asia and Australia although trees nearly three feet in diameter are not uncommon.

The Australian pine in its native habitat is not sufficiently abundant to be of commercial value. In many places, however, and particularly in India, it is grown in plantations on a commercial scale. Indian foresters consider it one of their important timber trees and have been growing it since the middle of the last century. The seedlings are extremely susceptible to drought, and therefore are watered during the dry season for the first

two or three years. The stands are generally thinned when five or six years old and cut when they reach an age of only ten years. Some plantations, however, are allowed to grow until thirty years old. The trees are seldom pruned since they seem to be injured by the operation. Australian pine is fairly susceptible to damage by fire, insects, and fungi, and as the bark is very thin, it is easily killed by fire, especially when young. Insects are particularly damaging to the seedlings. In India, ants carry off the seeds, crickets and even crabs thrive on the seedlings, caterpillars eat the bark, and it is attacked by boring beetle larvae. The foresters there, nevertheless, have developed satisfactory control methods and have kept these ravages at a minimum. In the New World, too, we have our insects which infest the Australian pine. Several pests have done some damage in the West Indies and South America but in Florida, thus far, no serious enemies have appeared.

Various fungi appear to be more serious than the insects. One root-fungus in India shows up when the watering of the seedlings is excessive and may destroy the plantation it attacks. In many places, two years are allowed to elapse between cutting and planting, and this appears to diminish the danger of fungus attacks.



Two well grown individuals, between ten and fifteen years old, growing at Aloma, Florida

Damaging fungi, however, seem to be largely restricted to regions of heavy rainfall and are of little importance in Florida.

Certain bacteria are found in great numbers in nodules on the roots of all adult specimens, but instead of being injurious are highly beneficial. They are the so-called nitrogen fixing bacteria and have the power to convert the free nitrogen of the air into compounds which plants can digest. This relationship between the Australian pine and the bacteria is unusual in the plant world, only a few other plants, mainly the legumes which include peas, beans, clover, and alfalfa, being inhabited by these bacteria.

Throughout the tropical world, the Australian pine is one of the commonest ornamentals, its dense evergreen

trees are surprisingly windfirm and even when grown in the most exposed localities are not often uprooted by hurricanes.

Perhaps the most important use that has been made of the tree comes from the fact that it can thrive in sea-side sand. In India, much of the shore was barren, sandy, and valueless. But when the Australian pine was planted, its roots bound together the sands, and its litter enriched the soil so that valuable timber trees were able to become established and grow. On the island of Mauritius in the West Indies, the land along the coast to a minimum depth of two hundred and sixty-five feet is part of the *domaine publique* and is planted with the Australian pine, between the rows of which grass is grown for pasturage. The wood of the Australian pine has many

uses. It is especially noted for its fuel qualities. It burns well and gives off great heat. A match size splinter burns slowly with a steady flame and little ash remains. In tests of the important Philippine fuelwoods, it was found that the air-dry wood of this tree had an unusually low moisture content, the smallest quantity of ash, and one of the highest calorific values. Dr. F. W. Foxworthy, a leading authority on tropical woods, has called it "perhaps the best firewood in the world."

The wood of the Australian pine is very heavy, weighing around sixty pounds a cubic foot when air-dry, or nearly as much as water. This is heavier than any of our commercial temperate woods. The oaks, for instance, average around fifty pounds a cubic foot. The wood is very strong and tough. It dresses cleanly and smoothly, exhibiting an

egg-shell luster and holding a high polish. When first cut, the wood varies from dark, blackish to red in color but when exposed, it turns almost black. Selected sticks possess a beautiful figure and these are highly esteemed for making furniture, especially in Australia. However, it is difficult to work and splits unless carefully treated.

On the other hand, it is durable, probably more so than the best oak, and is used widely for purposes where little cutting is required and cracks and splits are not culling defects. The main uses for the wood include general construction timbers, posts, piles, and railroad ties. In India it is widely used for farming implements, while in Polynesia it is commonly adapted for house-posts. Satisfactory paper pulp has been experimentally manufactured out of the wood in Florida. Many unusual uses are made of the wood of the (Continuing on page 142)



The "pine that isn't a pine" doesn't even look like a tree here, where it is growing as a hedge among the grapefruit trees at the author's home at Winter Park, Florida, adapted as a hedge. The character of the beautiful foliage shows clearly here

foliage, rapid growth, and graceful habit admirably suiting it to this use. The first trees were introduced into Florida for this purpose probably early in the last century and today the species can be found in practically every city or village in the peninsula. Often it is not allowed to assume tree form but is pruned into hedges or shrubs. It responds to trimming readily and forms a dense hedge that is without equal in Florida. In the West Indies, it is planted in cemeteries because of "its sombre appearance."

In recent years, the citrus growers and truck farmers in southern Florida have made much use of the Australian pine and its sister plant, the Cunningham pine (*Casuarina cunninghamiana*) as a windbreak. Since its demands upon the soil are slight, it interferes but slightly with the crops and groves and its tall slim crown lifts the wind by simply yielding. As a result of this, the

EDITORIAL



LUMBER ON THE CARPET

THE COURSE of lumber prices during the past six months under the impact of heavy government buying for national defense has given rise to much publicity unfavorable to lumbermen and forest industry in general. Charges made from time to time by Mr. Leon Henderson, defense commissioner in charge of price stabilization, that lumber prices had ascended to unreasonable and unjustifiable levels, have been widely publicized by the newspapers and have served to place the suspect sign of profiteering on manufacturers and sellers of lumber. These charges culminated in a meeting in Washington on January 23 when Mr. Henderson appeared before representatives of the industry, stood them on the carpet figuratively speaking, and in effect read them the riot act.

Said Mr. Henderson, "As far as I am concerned, I have had all the argument and all the explanation and all the excuse that I need, and a damned sight more as far as the price condition is concerned. * * * If the whole price level had acted in any way near what has happened in the lumber industry, this country would be in a state of paralysis. * * * It may be that this (lumber) industry cannot maintain the stability which is necessary. * * * Until I am stopped I am going to recommend the kind of things that will produce results, and what is the result that we want? We want a full supply, on time, and at fair prices. * * *

"We can get lumber. The government can get all the lumber it wants by fixing a price and having the Commander-in-Chief of the Army and Navy forbid any buyer's paying in excess of that amount; then, if not enough is offered, by using the Selective Service Act, which is nothing but an euphonious title for the draft act, for drafting lumber for camps the same way as you draft young men for camps. As far as I am concerned, if we don't get the lumber, I am going to make that kind of recommendation."

Mr. Henderson concluded his arraignment by saying in effect that that was that and no questions need be asked. In view of his statement and the publicity that has been given to lumber prices, it is interesting to examine into just what has happened in the lumber price market. Southern pine was particularly singled out by Mr. Henderson, who said that for Southern pine No. 2, \$25 represents a "decent price." That grade has supplied the bulk of the Army's need for construction lumber in the East.

Based on average mill prices reported by over forty large mills in the South, the market price on No. 2 items used in national defense construction in June was \$21.07. During July and August the price increased about \$2.00. When in September and October the government began to place large orders for quick delivery, the average price

moved upward to a peak of \$31.43 in November. It was slightly less in December and is reported down about \$5.00 in January. Between June and December, therefore, the average mill price increased approximately \$10.00 a thousand feet, or 46 per cent.

This compares with an increase of 33 per cent during the same period in the average mill price realized from total sales of all items, grades and sizes of Southern pine, including the above defense material and that sold in the general market. Lumbermen explain the greater percentage increase in the price of national defense items by the great pressure put upon the market by the government's demand for rush deliveries of some one and one-half billion feet of lumber at many different points. In numerous instances, deliveries had to be made within a time limit of from one to three weeks after opening of bids. Contributing to the price pressure was the defense demand for large amounts of a relatively few grades and sizes, governmental disorganization in its buying plans and a rising demand for lumber for private industry.

However that may be, it is difficult for the public to accept so large an increase in so short a time as other than evidence that the lumbermen have taken advantage of the national defense situation. This conclusion, however, does not necessarily follow, at least in the sense of profiteering or unpatriotic action. Those who have followed the ups and downs of lumber prices through the years may wonder that prices did not go even higher considering the volume of orders and the pressure for rush deliveries placed upon the industry. This is because lumber prices always have been highly sensitive to the tides of demands. It has never taken much of a boom to send them upward, nor much of a depression to send them downward. During the spring of 1937, for example, when a short-lived recovery set in, an increase comparable to that of last fall took place in even a shorter period of time and without the pressure and market disorganization created by the national defense demands. When the recovery collapsed around the middle of the year, lumber prices fell just as quickly as they had risen.

This is not said in justification either of present lumber prices or of the hair-trigger price structure of the industry. The latter is manifestly a weakness from which the industry has long suffered and which its leaders have been powerless to correct, due to the many thousand competitive units that compose it. Viewed without bias, the recent price trend reflects thus far a typical and traditional response of lumber to demand and before hastily accepting it as evidence of willful price-lifting, the public in reaching a fair conclusion ought to appraise it from that standpoint and from the standpoint of the emergency task performed by the industry under the trying and pressing conditions it was called upon to meet.

CONSERVATION IN SOUTHERN CALIFORNIA

By W. S. ROSECRANS

President, The American Forestry Association

IN THE February issue of *AMERICAN FORESTS* I endeavored to express how highly complimented we of the West are that The American Forestry Association is holding its 66th Annual Meeting at Los Angeles on April 15, 16 and 17. At the same time I gave a preview of what members and their friends attending this first annual conference to be held on the Pacific Coast might see and do in and around Los Angeles to make their visit profitable, interesting and entertaining.

Now I would like to touch upon a few of the many problems and activities that make Southern California, particularly in the Los Angeles area, unique in the national conservation picture. For in the minds of many, the conservation job in this region is far more signifi-

cant and decidedly more difficult to accomplish than elsewhere in the nation, a task that means not only the protection of life and property, but the perpetuity of a civilization in what we are pleased to call "Sunny Southern California"—a war against the adjacent desert claiming this garden spot for its own.

In order to realize the great variety of activities and the remarkable progress that has been made in conservation, it is essential that the natural characteristics of the region be fully understood. To begin with, the Los Angeles area is a comparatively small portion of the state of California, comprising three valleys—the San Fernando, the San Gabriel and the watershed of the Santa Anna River. Within a distance of thirty-

five miles this area rises from sea level to mountain-top elevations of 10,000 feet.

Living in the Los Angeles area are 2,500,000 people. They produce agricultural crops valued at more than \$100,000,000 a year, and goods worth \$1,000,000,000 annually are turned out by their manufacturing industries. There are many other forms of modern economic life, of course, the best known of which is motion pictures, produced here largely for the entire



To conserve the local water supply in the Los Angeles area, and at the same time to protect 2,500,000 people from flood damage, one of the major flood control districts in the nation has been created. This vast project, to cost nearly \$250,000,000 when completed, includes both upstream and downstream works—flood retarding reservoirs in mountain canyons, debris basins, as shown above, at the foot of canyons, and in the valleys, flood channels and spreading grounds, the first to relieve reservoirs of excess water during flood peaks, the second to conserve flood water by spreading it on porous gravels so that it may be absorbed into the ground. A typical spreading ground is shown at right



A Preview of Some of the Outstanding Problems and Activities to be Explored by The American Forestry Association at its 66th Annual Meeting at Los Angeles, April 15, 16 and 17

world. Yet so extremely arid is the area that without artificial means of irrigation, principally by the development of subterranean water and by water importations, Los Angeles and its environs could not support a population in excess of 50,000 human beings. That it does support forty times this number is a tribute to its hard won and continually progressive program of conservation—a program that has had to deal not only with a limited amount of water, but with the sudden and torrential character of this rainfall.

As challenging as the problem has been to supply the 2,500,000 residents of the area with water for domestic and other uses, the problem of protecting them and their property from devastating floods has been even more so. But these problems have been and are being met, and therein lies the conservation story of Southern California, and of the Los Angeles area in particular.

To maintain an adequate water supply for the Los Angeles area it has been necessary, first of all, to import water from Owens Valley on the east side of the Sierra Nevada Mountains, bringing it in by a 225-mile aqueduct. Now the great Metropolitan Aqueduct, at a cost of \$200,000,000, is nearing completion. This most modern of water systems will tap the Colorado River hundreds of miles away. But over and above these importations, the area's small local supply of water is of far greater value, and to make the most of this it has been necessary to increase the means of natural replen-

ishment by the spreading of flood waters on porous gravels so that the water may be absorbed into the ground and become later available for domestic or irrigation purposes. These spreading grounds, along with their diversion dams and channels, are in effect water farms where this very valuable commodity may be stored and conserved.

All efforts to conserve this local water supply are, of course, tied in with a program of flood control. In the Los Angeles area the two are inseparable and, as a result, there has been created a major flood control district taking in all of the watersheds and building dams, channels and other works for protection against floods. More than sixty-five million dollars raised by local taxation has been expended in the past fifteen years. The U. S. Army Corps of Engineers has expended during the past five years approximately an equal sum from federal appropriations and it is estimated an additional \$170,000,000 must be provided before this vast program



U. S. Forest Service



On the 17,000-acre San Dimas Experimental Forest, maintained by the United States Forest Service in the Los Angeles area, the technique and the science now being applied to this vast flood control and water conservation project have been developed. Determining exact measurements of rainfall and streamflow, particularly streams laden with silt and debris, the training of streams to follow their designated courses with a minimum of damage, and determining the water yielding capacity of various types of vegetative cover are but several of the forest's contributions to water conservation and flood control. Above is an air view of a flood control reservoir on the forest, at left, a climatic station

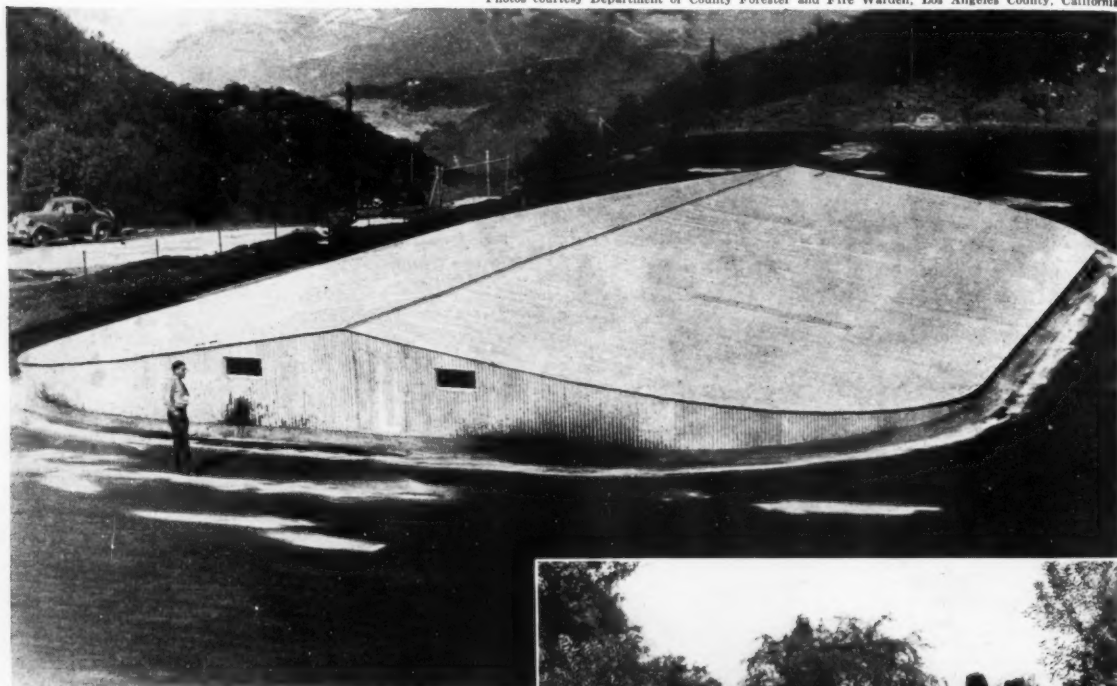
can be completed. In this connection, it is interesting to note that last September President Roosevelt approved a Department of Agriculture plan of upstream flood control work on the watershed of the Los Angeles River, which lies within the area. This is the first project to receive approval under the Flood Control Act of 1936, which authorized the Department to engage in water control work on the watersheds of approved flood control projects. The Los Angeles River project, as approved, calls for an expenditure over the next ten years of \$8,400,000 by the Department of Agriculture.

But getting back to the Los Angeles flood control district, one of the principal methods used to regulate floods, according to H. E. Hedger, chief engineer, has

program has dealt more particularly with the valley problem which is largely for the protection of life and urban development in the Los Angeles area proper. Here too vast retarding basins had been built and many miles of protective channel improvements constructed. These include rectangular reinforced concrete channels, trapezoidal concrete lined conduits, levees faced with concrete or rock riprap, and rock jetties.

In order to trap boulders, gravel, sand and other debris issuing from the most dangerous canyons during floods, seventeen debris basins have been built. These basins vary in storage capacity, averaging about 100,000 cubic yards of debris per square mile of drainage area.

Photos courtesy Department of County Forester and Fire Warden, Los Angeles County, California



The problem of providing watersheds adequate protection from fire has been critical in the Los Angeles district because of high fire hazards, low humidity and extensive recreational use of mountain areas. As a result there has been developed one of the foremost fire fighting organizations in the country, combining the best planning and facilities of both the federal Forest Service and the Los Angeles County Department of Forester and Fire Warden. Fire tank apparatus plays a big part in fire control in the region and the finest designs have been developed, as shown at right. And since water for fire fighting is scarce, great catchment basins, as shown above, have been constructed to impound water for this purpose



been the construction of flood retarding reservoirs. These are designed to absorb the flood peak and release the waters at a reduced rate in order that they may be carried by channels in the valley areas with a minimum of damage. The district has constructed fifteen of these regulatory dams in the major canyons of the area. They range in height from sixty-five to 365 feet, and have a total capacity of 117,140 acre feet. The Army

To conserve excess flood waters for beneficial use, extensive spreading grounds for the percolation of surface water into underground reservoirs have been constructed. When needed, this water can be pumped to the surface. Approximately 1,750 acres of spreading grounds are now being operated.

As all conservationists know, the flood control problem is intimately connected with the watershed management of mountainous areas. In the Los Angeles area most of the mountains at elevations below 5,000 feet are brush covered, these (Continuing on page 138)

For 1941

Ten Wilderness Trips

for Your Enjoyment

Ten expeditions to the major wilderness areas of nine different states are being planned for the Trail Riders of the Wilderness this summer under the direction of The American Forestry Association in cooperation with the United States Forest Service and the National Park Service. Although dates are as yet tentative, the following trips are being organized:

Expedition No. 1—June 22 to July 1

The Great Smoky Mountains of North Carolina—lofty mountains, virgin forests, plunging waterfalls, early summer wild flowers.

Expedition No. 2—July 8 to July 19

The million acre Bob Marshall Wilderness of Montana—a country of rugged grandeur just south of Glacier National Park and straddling the Continental Divide.

Expedition No. 3—July 16 to July 28

The remote Spanish Peaks-Hilgard Wilderness of Montana—rugged mountains, unnamed lakes, rushing streams, beautiful forests.

Expedition No. 4—July 23 to August 5

The magnificent Sawtooth Wilderness of Idaho—a wild kingdom of serrated mountains, alpine lakes, and pine forests.

Expedition No. 5—July 23 to August 4

The Wind River Wilderness of Wyoming—a land of many glaciers, of timberline trees, of spectacular canyons, of incomparable beauty.

Expedition No. 6—July 25 to August 7

The Maroon Bells-Snowmass Wilderness of Colorado—where the rugged mountain grandeur of the Rockies reaches dramatic heights.

Expedition No. 7—July 30 to August 11

The storied Gila Wilderness of New Mexico—a high country of timber and grassland, of winding canyons, of buttes and mountains that reflect astonishing colors in the sun.

Expedition No. 8—August 12 to August 24

The Flat Tops Wilderness of Colorado—a land of quiet charm, of amazing beauty in alpine meadows, forested valleys and flat, broken peaks.

Expedition No. 9—August 22 to September 3

The Kings River Wilderness of California—the nation's greatest spectacle in varied and unique mountain scenery. A true wilderness of the sky.

Expedition No. 10—September 9 to September 18

The Great Smoky Mountains of North Carolina—same itinerary as Expedition No. 1, with the beauty of early autumn as a background.

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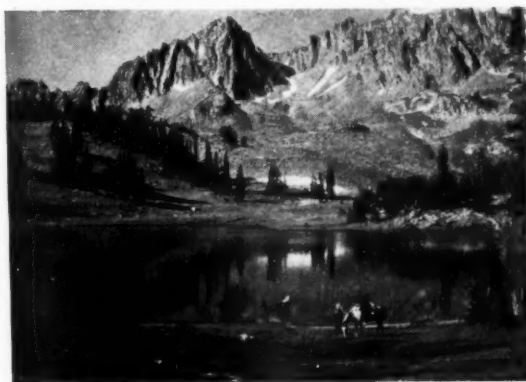
919 Seventeenth Street, N. W., Washington, D. C.

MARCH, 1941



U. S. Forest Service

Trapper's Lake in Colorado's Flat Tops Wilderness



U. S. Forest Service

In the remote Spanish Peaks Wilderness, Montana



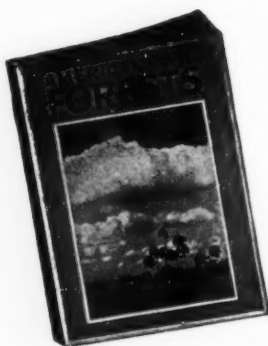
Rae Lakes, gem of the High Sierra, California



John B. Schutte

In the heart of rugged Snowmass Wilderness, Colorado

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National Defense and Public Regulation Feature Forester's Annual Report

Forests are contributing in a large way to the military defense of democracy in the New World but "the United States is not yet making adequate provision for defense of our forests," declares Earle H. Clapp, acting chief of the Forest Service, in the annual report of that bureau for the fiscal year 1940. The report was issued last month and lays special stress upon the importance of forests in national preparedness and upon the need of public regulation to assure preparedness of the country's forest resources.

The forest sector of our agricultural program, Mr. Clapp asserts, has failed to keep up with other sectors of it and he expresses the view that "it is the nation or group of nations most adequately supplied with natural resources—and with the determination and ability to make the most effective use of them—that has the best chance to survive and prosper."

The weak point in this country's handling of its resources, according to Mr. Clapp, is the manner in which owners of private timber lands are handling their forest properties. Private ownership controls three-fourths of all the country's commercial forest land, he asserts, and here is where the crux of the nation's forest problem lies. While admitting that some progress has been made by private owners in better forest management, forest exploitation is still the rule, and the lack of progress among industrial and non-farmer owners, he says, is on the whole appalling.

"In short," he continues, "we are still liquidating forests on privately owned land. We are still creating ghost towns and rural slums. And the public still pays in human misery, in destruction of a basic resource, in loss of taxable wealth, in more and more public funds spent for such things as forest restoration, not to mention reclamation and water-power and nation-wide flood control and erosion control projects.

"It may be said that industry is responsible for all this because of its abuse of the forest. But in the interests of truth and justice it must be said that the public is also responsible because of its indifference, and that because federal and state governments have allowed it to continue, they share in the responsibility."

Declaring that private ownership of forest lands carries with it a public obligation of good management, the report asserts that forest owners should meet these obligations by accepting such public controls as will insure approved forest practices. The Forest Service, Mr. Clapp says, believes federal regulation preferable but as a compromise proposes an eight-point plan based upon state regulation with federal cooperation and federal assumption in states which do not put into effect satisfactory forest practices by private owners.

In brief, this plan would give the states five to seven years within which

to pass state regulatory laws requiring owners to comply with forest practices adaptable to their conditions. If a state fails to act or if its standard of forest management is not satisfactory to the Secretary of Agriculture, the federal government would be authorized to step in and take over the regulation task. Where states assume the regulatory power in a satisfactory manner the federal government would contribute on a fifty-fifty basis to the cost of state administration.

The plan further provides that forest land owners shall participate in working out acceptable forest practices for their region and shall have the right of appeal through non-governmental boards from decisions rendered by the state or the federal government.

In addition to highlighting conditions on privately owned forest lands, the report summarizes progress in the different lines of Forest Service work and contains much interesting information. As respects reforestation, for example, it reports that during the last twenty-nine years areas within the national forests aggregating almost one and one-quarter million acres have been planted. Help by the CCC has been largely responsible for the progress shown. Within the national forests some 3,000,000 acres are still in need of reforestation. With purchase units the national forests at the close of last fiscal year included approximately 176,600,000 acres in forty-two states and two territories.

More national forest timber, the report states, was harvested during the last fiscal year than in any previous year. Credit for this record is given to commercial forest growth on eastern national forests. These forests have been purchased in past years largely in the form of cut-over lands. With fire protection the forest growth has recuperated rapidly and is providing a timber sale business which in point of value of timber cut last year was second only to the national forests of the Pacific Northwest. Sales in all national forests numbered more than 27,500 and involved stumping of almost two billion board feet and yielded receipts of approximately \$4,000,000.

Growth of recreation in the national forests is shown in figures given for that activity. Campers, hunters, fishermen, hikers, skiers, etc., now number over 14,000,000, while tourists interested in scenery or climatic relief exceeded 20,000,000.

The total cost of protecting, developing and operating the national forests is given as \$30,997,910, which includes over \$10,000,000 for acquiring national forest lands and for the construction of forest highways. Net receipts from the national forests last year totaled \$5,859,184, of which approximately a million and a half dollars were returned to the states.

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Los Angeles County—Nature's Vacationland

Supreme Court Votes Broad Federal Power Over Water Development

The right of the federal government to exercise broad authority over development of water resources was confirmed on December 16 by the United States Supreme Court. The case involved proceedings to enjoin the Appalachian Electric Power Company from constructing and putting into operation a hydro-electric dam in the New River near Radford, Virginia, in the event it failed to be licensed by the Federal Power Commission and meet the requirements prescribed in the Federal Power Act for the construction of hydro-electric dams in navigable rivers.

Previously, the District Court and the Circuit Court of Appeals had ruled that the New River is not navigable and therefore not subject to federal license. However, after reviewing at considerable length the evidence bearing on the extent to which the river had been used as a navigable waterway, its physical characteristics, and the practicability of improving its navigability by artificial means, a majority of the Supreme Court, speaking through Mr. Justice Reed, reached the conclusion that the judgment of the two lower courts was erroneous and remanded the case "to the District Court with instructions to enter an order enjoining the construction, maintenance or operation of the Radford project otherwise than under a license, accepted by the respondent within a reasonable time, substantially in the form tendered by the Federal Power Commission on or about May 5, 1931, or in the alternative, as prayed in the bill."

In reaching its decision the Court said that the power of the United States to regulate commerce among the several states "necessarily included power over navigation," and in the exercise of this power the Congress "may keep the navigable waters of the United States open and free and provide by sanctions against any interference with the country's water assets." It also held that it is erroneous "to appraise the evidence of navigability on the natural condition only of the waterway." Account should likewise be taken of "its availability for navigation," since:—

"A waterway, otherwise suitable for navigation, is not barred from that classification merely because artificial aids must make the highway suitable for use before commercial navigation may be undertaken. Congress has recognized this in section 3(8) of the Water Power Act by defining 'navigable waters' as those 'which either in their natural or improved condition are used or suitable for use. . . . The power of Congress is not to be hampered because of the necessity for reasonable improvements to make an inter-

state waterways available for traffic.

" . . . The plenary federal power over commerce must be able to develop with the needs of that commerce which is the reason for its existence. It cannot properly be said that the federal power over navigation is enlarged by the improvements to the waterways. It is merely that the improvements make applicable to certain waterways the existing power over commerce. In determining the navigable character of the New River it is proper to consider the feasibility of interstate use after reasonable improvements which might be used."

The Company contended "(1) that the United States' control of the waters is limited to control for purposes of navigation, (2) that certain license provisions

ANCIENT PINE TREE

. . . and the ancient, ancient pine-tree
stood on guard, before the mountain,
watched the prairie, while the sunrise
stained its furrowed bark magenta . . .

Twice a hundred years it watched them,
and the bull-elk and the grizzly
knew its shade, beside the game-trail,
and the eagle knew its branches . . .

Silver-tip left mighty scratches,
tribal pow-wows left their spear-heads;
here the young buck found his totem,
here the warrior sought his maiden . . .

But the ancient pine outlived them—
twice two-hundred years—still standing,
where the war path turned to game-trail . . .
and the game-trail to a highway.

—Blanche DeGood Lofton

take its property without due process, and (3) that the claimed right to acquire this project and to regulate its financing, records and affairs, is an invasion of the rights of the states, contrary to the Tenth Amendment."

With respect to the first contention the Court had the following to say: "In our view, it cannot properly be said that the constitutional power of the United States over its waters is limited to control for navigation. By navigation respondent means no more than operation of boats and improvement of the waterway itself. In truth the authority of the United States is the regulation of commerce on its waters. Navigability, in the sense just stated, is but a part of this whole. Flood protection, watershed development, recovery of the cost of improvements through utilization of power are likewise parts

of commerce control. . . . The point is that navigable waters are subject to national planning and control in the broad regulation of commerce granted the Federal Government. The license conditions to which objection is made have an obvious relationship to the exercise of the commerce power. Even if there were no such relationship the plenary power of Congress over navigable waters would empower it to deny the privilege of constructing an obstruction in those waters. It may likewise grant the privilege on terms."

In considering the second contention the Court said that since there is no private property in the flow of the stream it has no assessable value to the riparian owner. Therefore if the government should decide to build the dam at the site in question it would have to pay the company fair value for its land, but nothing for the water. Since the government can construct the dam itself, it may, in the opinion of the Court, acquire one already constructed in accordance with the provision in the Power Commission license. If such fair value is judicially determined it was held there would be no taking of property without due process in the event the government should exercise its right, upon expiration of the license, to take over and operate the project.

With reference to the third contention the Court said that acquisition, or option to acquire, by purchase the company's project is not an invasion of the sovereignty of a state. As long as the United States keeps within its delegated authority to regulate commerce there can be no interference with state sovereignty. The Court pointed out that "the water power statutes of the United States and of Virginia recognize the difficulties of our dual system of government by providing, in each of its own enactments, for the exercise of rights of the other."

There is a vigorous dissenting opinion by Mr. Justice Roberts, in which Mr. Justice McReynolds concurred. In their opinion the Supreme Court should have accepted the findings of fact by the two lower courts respecting the navigability of the New River. Moreover, it is asserted that the evidence in the record does not support the finding of the majority of the Court "if the navigability of New River be tested by criteria long established," namely that navigability in fact must exist under "natural and ordinary conditions." The majority opinion held that "natural and ordinary conditions" refers only to volume of water, gradients, and regularity of flow.

1942 WILDLIFE CONFERENCE IN CANADA

The Sixth National Wildlife Conference Meeting at Memphis, Tennessee, as this issue goes to press, and keynoting conservation and national defense, voted to hold the Seventh National Wildlife Conference in 1942 in Toronto, Canada, as a gesture of friendship and aid to Great Britain. Dates of the 1942 meeting will be announced later.

ON TO LOS ANGELES!

Southern California prepares a cordial welcome to members
and friends of The American Forestry Association

APRIL 15-16-17, 1941

YOU and your friends are cordially invited to attend the 66th Annual Meeting of The American Forestry Association to be held in Los Angeles, April 15, 16, 17. A special program in keeping with the occasion is being developed. Interesting field trips are being arranged—trips which will make it possible for those attending the conference to enjoy the rare beauty of Southern California in April.

HEADQUARTERS

Headquarters will be at the Los Angeles Ambassador Hotel—situated in its own twenty-two acre park in the heart of the Wilshire District. Here will be found in all its genial western charm, that spirit of welcome which has made magic of the very name "California!"

The Ambassador is noted for its famous Cocoanut Grove for dancing, its talking picture theater, its Lido swimming pool and many other forms of sport and recreation.

HOTEL RATES

Special convention rates on the European plan have been established as follows, and reservations may be made direct to the hotel or by writing to the Association:—

\$4.00 per day, per person, two in a room with bath, individual beds.

\$4.00 per day, per person, three in two connecting rooms with bath, individual beds.

\$3.50 per day, per person, four persons in two connecting rooms with bath, individual beds.

\$3.25 per day, per person, three in a room with bath, individual beds.

\$6.00 per day, room and bath, single occupancy.

(Lower rates are available at hotels close to the Ambassador)

SPECIAL TOUR

Your Association is planning for its members and friends a special transcontinental tour. This special party will meet in Chicago and through the cooperation of the U. S. Forest Service and the National Park Service will enjoy en route special features not otherwise available.

Leaving Chicago at 1:35 a.m. April 11 (sleepers available at 10 p.m. April 10) the group will arrive at Lamy, New Mexico at 11:45 a.m. April 12 for a visit to Santa Fe and its colorful Indian country roundabout. By bus the party will make the short trip to Albuquerque to be greeted by members of the U. S. Forest Service, embarking at 7:10 p.m. for the overnight ride to Grand Canyon National Park. No description of this incredible work of Nature is necessary and members and friends of the Association will find this visit to the Canyon's South Rim exceptionally interesting. The party will leave Grand Canyon at 8 p.m. arriving in Los Angeles at 11:40 on April 14.

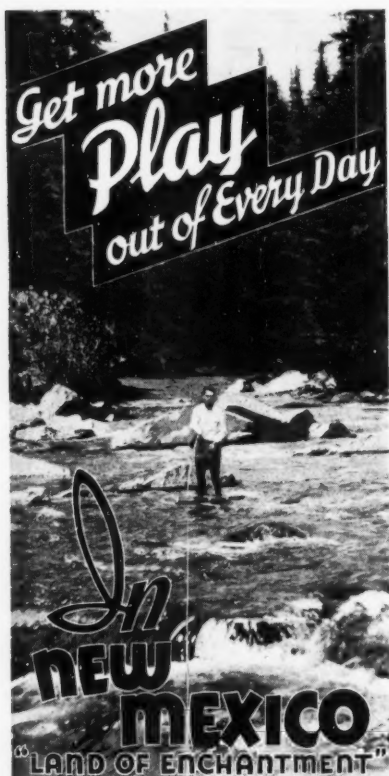
The round-trip cost from Chicago to Los Angeles, including the special stop-over at Santa Fe, and Grand Canyon, is \$98.80 plus \$19.70 Pullman each way. From New York City, \$148.25 round trip, plus \$26.00 Pullman each way. Members of the party may return via the Santa Fe or any other transcontinental railroad they desire.

May we suggest that you write us now regarding this special tour to the Association's Meeting.

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New Mexico." () Official 1941 Road Map. () New
Booklet, "Land of Enchantment."
To _____

CONSERVATION IN CONGRESS

CONSERVATION, like most other non-emergency subjects, continues to remain in the background of Congress while the aid-to-Britain bill holds the stage. During the past month additional bills relating to one or another field of conservation have been introduced and routinely referred to committee, but there has been little or no committee action relating to them. An exception is the House Subcommittee on Appropriations which has been holding continuous hearings on appropriations for the next fiscal year, as recommended to Congress in the President's budget message of January 9. The attitude of the committee in respect to appropriations recommended will not be known until the departmental bills are reported out. The present outlook, however, is that the conservation items, as given in last month's issue, will be generally supported by the committee.

On February 20 the Senate passed the \$375,000,000 Urgent Deficiency Appropriation bill, H. R. 3204. This included a Senate amendment permitting the allotment of \$20,000,000 to other federal activities. By so doing organization for early continuation of white pine blister rust control, Dutch elm disease eradication, gypsy and brown-tail moth control, and several other forestry activities is promised. Senate action must be approved by Senate and House conferees prior to final consideration by the House. Action is expected before the end of February.

Pulp Investigation

During the week beginning February 10, the House Subcommittee on Agriculture began hearings on Congressman Fulmer's H. J. Res. 15, which calls for an investigation by Congress of "the apparent monopolistic purchasing of pulpwood by pulp and paper mills under a contract-purchase system from farmers and other owners, price fixing of paper and other pulp products under trade practice rules and regulations including cost of distribution." The bill reflects Mr. Fulmer's contention that farmers in the South are not receiving a fair price for their stumpage. As this is written, the hearings were continuing with indications that the investigation may be widened to cover prices and methods of purchasing stumpage generally.

By resolutions introduced by Congressman Robertson, of Virginia, and passed by the House, the special committee of the House to investigate conditions relating to wildlife has been continued and an appropriation of \$7,500 approved to cover the cost of the committee's operation during the 77th Congress.

Reorganization

Anticipation that a bill or resolution would be introduced by the administration extending the reorganization power of the President has not been fulfilled, although it is generally accepted in Washington that such a measure is to be introduced after the aid-to-Britain bill has been disposed of. Much to the relief of the Forest Service and those interested in seeing it remain in the Department of Agriculture, the President's authority under the Reorganization Act of 1939 expired on January 20 without the President sending to Congress an order to shift the Service into the Department of the Interior. Prospects for resumption of this fight now appear to wait upon action by Congress renewing the President's reorganization powers.

Joint Committee Report

In the field of forestry, another event of special interest is the report of the Joint Congressional Committee on Forestry, which under the legislation creating it is required to submit its report to Congress on or before April 1. The committee was created to study and recommend to Congress a legislative frame-work for a national program of forestry. After committee hearings held during the past two years in Washington and other points throughout the country, the main controversial issue emerging was that of public regulation of lumbermen and other owners of private timber. What recommendation the committee will make in respect to this long standing controversial issue among advocates is a matter of keen anticipation. The committee is now preparing its report and no indication has been given as to its substance. The best guess is that it will confine its main recommendations to better protection of forests from fire, insects and disease, the stepping up of forest research, and regulatory action through the states rather than by the federal government.

Future of CCC

Talk in Washington that there is a merger in the offing of the Civilian Conservation Corps and the National Youth Administration has not been supported in any legislative action in that direction although several bills relating to the CCC have been introduced in Congress. One is by Congressman Randolph of West Virginia to provide instructions in military training for enrollees, and the other by Senator McNary to authorize the use of CCC labor on building roads in connection with irrigation projects. Reports

(Continued on page 137)

CONSERVATION CALENDAR

Important Bills in Congress, with Action
January 14 to February 4

APPROPRIATIONS

- H. R. 2788—WOODRUM—Making appropriations for the Executive Office and sundry independent executive bureaus, boards, commissions, and offices for the fiscal year ending June 30, 1942. Passed House January 31. Referred to the Senate Committee on Appropriations February 3.
- H. R. 2809—GREEN—Appropriating \$9,000 for the establishment of a wildlife research unit in the State of Florida. Introduced January 29. Referred to the Committee on Appropriations.

CONSERVATION

- S. RES. 53—O'MAHONEY—Authorizing the Committee on Public Lands and Surveys to make a full and complete study and investigation with respect to the development of the mineral resources of the public lands. Introduced January 23. Referred to the Committee on Public Lands and Surveys.

FISH AND WILDLIFE

- H. RES. 49—ROBERTSON, Virginia—Authorizing the "Special Committee to Investigate All Matters Pertaining to the Replacement and Conservation of Wildlife" to continue its investigation through the present session of Congress. Agreement reached January 22.
- H. RES. 50—ROBERTSON—Providing \$7,500 to cover the expenses of conducting the investigation continued under authority of H. Res. 49. Agreement reached January 30.

GOVERNMENTAL FUNCTIONS

- S. 601—MCNARY (H. R. 628—RANDOLPH)—To amend section 9 of the act of May 22, 1928, authorizing and directing a national survey of forestry resources. Introduced January 27. Referred to the Committee on Agriculture and Forestry.
- S. 730—MCNARY—To amend the Civilian Conservation Corps Act to authorize the use of CCC labor on building roads in connection with irrigation projects. Introduced February 3. Referred to the Committee on Irrigation and Reclamation.

- H. R. 2246—COFFEE—To create the National Natural Resources Corporation. Introduced January 16. Referred to the Committee on Ways and Means.

LANDS

- H. R. 3016—PETERSON—To establish a national land policy, and to provide homesteads for actual farm families. Introduced February 3. Referred to the Committee on the Public Lands.

NATIONAL FORESTS

- S. 155—HOLMAN—To authorize the expenditure of \$250,000 for the enlarge-

ment of the Timberline Lodge located within the Mount Hood National Forest, Oregon, etc. Introduced January 6. Referred to the Committee on Public Lands and Surveys.

- S. 365—JOHNSON—To provide for the use of 20 per cent of the grazing receipts from national forests for the making of range improvements within such forests. Introduced January 16. Referred to the Committee on Public Lands and Surveys.

- H. R. 2516—IZAC—Authorizing an appropriation of \$20,000,000 for the purpose of providing necessary fire and erosion control, and water conservation by the protection and improvement of existing vegetative cover for the control of run-off on lands lying within the Angeles, San Bernardino, Los Padres and Cleveland National Forests, etc. Introduced January 21. Referred to the Committee on Agriculture.

NATIONAL PARKS

- S. 329—ELLENDER—To provide for the establishment of the Tensas Swamp National Park, Louisiana. Introduced January 14. Referred to the Committee on Public Lands and Surveys.
- H. R. 2286—O'CONNOR—To amend the "Act to establish a National Park Service," to provide for the adequate housing, feeding, and transportation of the visiting public and residents of the national parks and monuments, etc. Introduced January 16. Referred to the Committee on the Public Lands.
- H. R. 2320—WEAVER—To accept the cession by the states of North Carolina and Tennessee of exclusive jurisdiction over the lands embraced within the Great Smoky Mountains National Park. Introduced January 16. Referred to the Committee on the Public Lands.
- H. R. 2614—HOOK (H. R. 3014—HOOK)—To provide for the addition of certain lands to the proposed Isle Royale National Park in Michigan. Introduced January 22. Referred to the Committee on the Public Lands.

PUBLIC DOMAIN

- S. 633—VAN NUYS (H. R. 2615—SUMNERS)—To amend the Criminal Code in respect to fires on the public domain or Indian lands or on certain lands owned by the United States. Introduced January 29. Referred to the Committee on the Judiciary.

WATER AND STREAM CONTROL

- S. 705—OVERTON (H. R. 3064—NORRELL)—To amend the project for flood control of the lower Mississippi River, adopted by the Act of May 15, 1928, etc. Introduced February 3. Referred to the Committee on Commerce.



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FEDERAL NEWS AND REVIEWS

Nearly 750,000 acres of scenic, recreational, and historical land were added to the federal park system during the year which ended June 30, 1940, according to the annual report of the National Park Service. On that date the Service had custody over 21,550,783 acres in 161 areas.

Major acquisitions of the year were the new 454,000-acre Kings Canyon National Park of California, Isle Royale National Park in Lake Superior, and the addition of nearly 200,000 acres to the Olympic National Park in Washington.

Travel to the national parks and monuments totaled 15,454,367 persons in the travel year ending September 30, 1939. From that date through June 30, 1940, travel was approximately 500,000 ahead of the preceding year.

Million Acres Reforested

More than 1,000,000 idle acres have been put to work producing timber and other forest crops, according to the year-end summary of the United States Forest Service, giving the results of tree planting on national forests in thirty states.

With 902,040 acres of existing plantations reported from previous years, the preliminary summary of 1940 planting of 146,942 acres brings the total area of national forest land reforested or afforested to 1,048,982 acres. The bulk of the work in recent years has been accomplished by Civilian Conservation Corps camps under Forest Service supervision.

The five-year average costs on the national forests, which include charges for labor as well as materials used in growing the trees in nurseries, ground preparation where necessary, and actual planting of an average of 955 trees an acre, amounts to \$11.50 an acre. With fire protection costs of a few cents per acre a year added, the government stands to obtain a good net return from planting at the end of a fifty or sixty year period on areas where commercial timber is being grown.

Forest Service officials estimate that about 3,000,000 acres of national forest lands still need replanting in order to repair damage from fires or neglect of the lands previous to their acquisition by the federal government for national forest purposes.

Wildlife Conservation Aids Defense

Success achieved thus far in restoring and conserving wildlife has made it easier for the United States to undertake an intensive national defense program, declared Dr. Ira N. Gabrielson, chief of the Federal Fish and Wildlife Service, in his annual report.

"Conservation of wildlife," he pointed out, "is one way of making a country worth living in—a first essential in inspiring zealous defense."

The benefits of wildlife conservation, the report states, are long-time benefits. They will be as important in future requirements for good living and in future national emergencies as they are at present.

The year 1940 in government wildlife circles, was characterized largely by reorganizations. "Through these changes," it is emphasized, "the federal government enters the fiscal year 1941 better organized than ever before to carry on the work of wildlife restoration." During the year the Biological Survey was transferred to the Department of the Interior from Agriculture. This Bureau was then consolidated with the Bureau of Fisheries to form the Fish and Wildlife Service which also acquired the Wildlife Division of the National Park Service.

The actual work of the year was "in the main a continuation of programs already under way looking toward the ultimate objective of sound wildlife restoration," the report declares.

Three new areas were added to the federal wildlife refuge system, bringing the total to 263 with an acreage of 13,635,365. For the fourth consecutive year increases were noted all over the country in wildlife on the refuges. For the sixth consecutive year general increases on the continent were seen in waterfowl populations as a result of the program of restricting hunting and providing refuge areas.

The program for aiding the states in wildlife restoration became more extensive and more effective. A total of 237 projects begun by the states with federal aid, involving \$2,082,735, represented a great increase over the work during the preceding year, first under the program, when fifty-eight projects were begun.

Recreation Study

A regional study of the public recreational facilities and needs of the eight central southeastern states has been started by the National Park Service in collaboration with state officials and other federal agencies. The study will embrace the Tennessee and Cumberland River watersheds and the surrounding area affected by them. Recreational resources will be studied in relation to public needs, with special consideration of the chain of lakes on lands administered by Tennessee Valley Authority and of upland forested areas which are suitable for vacation use and possess more than local drawing power.

It is expected that the cooperative study will enable the state and federal agencies involved to effect a coordinated recreational program. The information obtained also will be helpful in formulating such recreational programs as may be necessitated by the congestion of people due to the national defense activities.

The CCC Reports

The importance of the Civilian Conservation Corps as an instrumentality for national defense highlighted the 1940 annual report of James J. McEntee, director of the CCC.

"In the Civilian Conservation Corps this country has a going concern which has shown itself capable of developing physical hardihood in youth and of providing practical training and work experience which enable young men not only to help themselves but their country as well," Director McEntee declared. "This country had the initiative to launch the CCC program and support it through the years leading up to the present critical world situation, and is thereby collecting national defense dividends today.

"The Corps has brought physical hardihood to 2,300,000 young men who now or shortly will be in selective service age groups. It made possible the creation of large numbers of trained men in such skills as truck driving, mechanics, road building, telephone line construction, and radios. Through the Corps the nation has been converting unemployed young men without work experience into good workers and good citizens and at the same time

advancing a tremendous conservation program which has added importantly to our natural resource wealth and economic preparedness.

"As a going concern the CCC is operating 1,500 camps and giving employment to more than 300,000 enrollees. It is ready for rapid expansion if the need arises. Annually, it is bringing physical hardihood to 250,000 youngsters who will be old enough for selective service in from one to four years. By continuing this manbuilding program, the nation will continue to strengthen national defense by building up the health and skills of youths, thus assuring a constant flow of well-developed young men into the age groups now affected by the selective service law."

The report brought out that of the 1,500 camps in operation throughout the past year, 1,000 were assigned to projects under the jurisdiction of the Department of Agriculture and 500 to Department of Interior projects. Under Agriculture, the Forest Service supervised 616 camps and the Soil Conservation Service 392 camps; under Interior 310 camps were on projects of the National Park Service, forty-four on Bureau of Reclamation projects, and thirty-five on projects of the Fish and Wildlife Service.

Death Claims Thomas H. Sherrard

THOMAS HERRICK SHERRARD, oldest member of the United States Forest Service in point of service, died on January 22 at Portland, Oregon. He was sixty-six years old, and since 1939 has been senior forester in the Portland regional office.

A native of Brooklyn, Michigan, Mr. Sherrard entered the Forest Service before it was organized as such in 1899. He graduated from Yale University and had taken a post graduate course in forestry at Harvard and the University of Munich. Following several years as field assistant, he was made assistant forester to Gifford Pinchot in 1903.

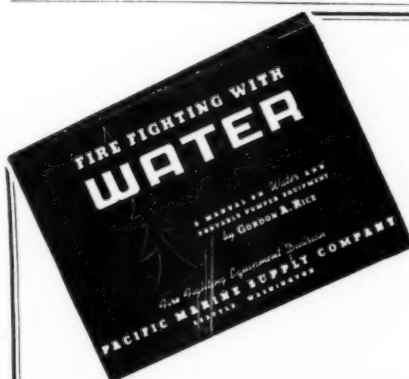
Mr. Sherrard was appointed supervisor of the Pike's Peak National Forest, Colorado, in 1906, and in 1907 began his long career in the Oregon forests. In that year he was appointed supervisor of the Cascade National Forest, which covered the Cascades from the Columbia River to the California border. Later, a part of it became the Oregon National Forest and subsequently the Mount Hood National Forest, the development of which is in itself a monument to his services.

Mr. Sherrard saw the development of administration of the forests of Oregon from their primitive status of scattered trails when horses were the only means of getting about, to the road and improved trail network of today, and the almost complete use of mechanized equipment.

Development and improvement of the City of Portland's Bull Run water reserve was patterned during his regime in the Mount Hood forest. In 1920 he was transferred to the regional office at Portland as district forest inspector, but in

1921 returned as supervisor of the Mount Hood forest. In 1934 he was appointed Civilian Conservation Corps inspector for the Forest Service and the following year became assistant in the regional forester's office. He became senior forester in this office in 1939 and held that post at the time of his death.

Mr. Sherrard was one of the men who designed the Forest Service badge.



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Oaks bring color to city streets and are beautifully adapted for use where tree-lawns are wide or the street runs through a park, as in this case

YOUR SHADE TREES

WHY NOT USE MORE NATIVE SPECIES?

By ARTHUR B. WILLIAMS

MOST sections of the eastern United States have been blessed by nature with a fine array of native deciduous trees. Many of these are among the finest in the world for roadside shade-tree purposes. Are we not missing something of our heritage by our obvious failure to use more than a relatively small number of these native species in our city plantings? Although so many of these natives are excellently suited for tree-lawn planting and for parkway beautification, an obsession seems to have developed in some places for embroidering the edges of our native woods with Austrian pines and Norway spruces, and for filling up our city streets with London plane trees, Norway maples, horse chestnuts, ginkgos, sycamore maples, ailanthus, European lindens, Lombardy poplars, and others, while one might count on the fingers of one hand the native species that are more or less habitually used by city tree authorities for their tree-lawns.

I do not mean to suggest that all native forest trees are suited to city planting. Forest conditions are one thing, city conditions quite another. Some species are at once ruled out for city use, while others should receive careful study and should be subject to experiment before planting in quantity. Still others we know can make the grade, only they are not so easy to get or so cheap as some less desirable species.

One needs to think of the radically changed environment that the city offers these trees accustomed for thousands of years to a woodland setting. Perhaps one of the best examples of a species unable to endure the change is our well-known beech. Here is a tree of exceptional beauty and a great provider of shade. By all the standards of desirability it would be a welcome addition to the city tree-lawn. But it languishes and dies when its forest environment is taken away from it.

The beech is a typical tree of that habitat which is midway between the very wet and the very dry—the "mesic" habitat of the ecologists. Enormous changes take

place in such a habitat when the city takes over the land. The original forest, of which the beech is a dominant member, has really created an environment of its own, quite different from that of the nearby open country. The evaporating effects of wind, direct sunshine, and high temperatures in summer are greatly reduced beneath the forest canopy. A rich humus, capable of holding water like a sponge, has been built up through many years by the accumulation and decay of forest litter. But with the removal of the trees to make way for the farms, and later for the cities, the drying effects of sunshine, wind, and high temperature come into play; the ground cover of humus and lesser plants disappears; low swampy places that have played the part of natural reservoirs for the conservation of moisture, are drained; the little woodland brooks are encased in culverts, or their waters diverted to storm sewers. Finally the land surface becomes largely occupied by paved city streets, curbing, sidewalks, driveways, and buildings. Below ground are sewers, water pipes, conduits, and gas mains, and above ground a maze of poles and overhead wires. With the spread of industry the air becomes laden with soot, sulphuric acid, and the dry dust and grime of traffic. The tread of many feet gradually hardens the ground, and what moisture nature

bestows in the form of rains is quickly and efficiently whisked away by gutters and storm sewers.

Thus the moisture content of the soil, so essential to plant growth, is reduced to a minimum, the soil itself is sometimes poisoned by gas leaks, and its enrichment by the natural processes of decay ceases. The cool, moist environment in which the



Though the spread of industry has complicated the problem, industrial locations need not be treeless, as shown above, for native species may be used to good advantage in beautifying such areas—as shown below



beech once flourished is no longer mesic, but "xeric"—dry.

The wonder is, not that many forest trees, like the beech, were unable to carry on under these radically changed conditions, but that so many of them did prove tolerant to a new order of things and so make the city shade-tree a possibility. It should ever be borne in mind, however, that city trees, removed from the possibility of improving their environment, as would be the case under natural conditions, need care and attention if they are to thrive as city dwellers.

And so, with the passing of primitive forest conditions, the species-list of trees that could survive on tree-lawns is considerably reduced.

Unfortunately, too, some of the trees that seem to stand the handicaps of city environment better than others have certain characteristics that make them otherwise undesirable. The silver maple is a good example of such a species. While this tree seems to have a high degree of resistance to the deleterious influences of city surroundings, its growth habits are not pleasing, its shade is meager, its wood is soft and brittle and the tree subject to injury by storms; while its roots, in search of moisture, often cause considerable damage to water and sewer systems.

Then there are other species, like many of the oaks and maples, that are intolerant of city smoke, yet in proper locations where prevailing winds or distance from the source of contamination offers protection from this menace, will contribute much to the beauty of city highways.

While we are on the matter of beauty let us not lose sight of the contribution that autumn colors make to the landscape. Recently a newspaper writer bemoaned the fact that whereas the countryside was ablaze with gorgeous autumn tints, the trees of her city exhibited practically no color. "Why is it," she queried, "that the trees in the city turn only a pale dirty yellow?" Of course the answer to her question was simply that her city is choked with silver maples, catalpas, and sycamores—trees that practically never show anything but dull colors in autumn.

In connection with autumn color, I wonder if there is in any American city a street lined on both sides with tupelo, or sour gum (*Nyssa sylvatica*)? If there is, it should be the glory of the neighborhood and the pride of the city,—and would be worth going a long way in the fall of the year to look upon, for then the trees will be clothed in scarlet that for brilliance can scarcely be matched by any other tree. But it is not only only in autumn that the tupelo is good to look upon. Its straight trunk with always interesting bark patterns, and its dark green lustrous leaves make it a handsome tree at any season of the year. Perhaps the fact that it is supposed to be a difficult tree to transplant, except when small, may have had something to do with its neglect as a street tree.

Again, is there anywhere a broad avenue, flanked on either side by great tulip trees (*Liriodendron tulipifera*)? If there is, such a street should be worth a great deal from the standpoint of advertising

the city beautiful. Here is one of the most lordly of our American forest trees with a range covering most of the eastern United States. Its straight trunk, its deeply furrowed bark at maturity, its glossy green, distinctively cut leaves, its "tulip" blossoms of green and pink in spring, its golden-yellow leaves in autumn, entitle it to a position among the most impressive of native trees.

The other day a friend who had just built a home in the suburbs on a rather narrow street which had not yet been planted to trees, asked: "What species among the smaller native trees would be a good one for this street?" "Well," I said, "I've never seen it done, but what would you think of hop hornbeam?" (*Ostrya virginiana*). This is normally an understory tree in the forest where it is often distorted and repressed in its development. I was thinking of the hop hornbeam tree in my own yard. Growing in the open and not shaded by taller trees, it has developed a spire-like, symmetrical form. In autumn its leaves are pure yellow, though I have seen other hornbeams whose leaves showed shades of pink.

Oaks ought to be used more largely for city tree planting, because fine results are achieved by their use. It is true that they do not do well in a smoke-laden atmosphere, but there are other locations where they will thrive, and by nature certain oaks are suited to the dry or sandy soils which the city environment usually provides. Such species are scarlet oak (*Quercus coccinea*), black oak (*Q. velutina*), white oak (*Q. alba*), and rock chestnut oak (*Q. montana*). Others, like pin oak (*Q. palustris*), swamp white oak (*Q. bicolor*), bur oak (*Q. macrocarpa*), and shingle oak (*Q. imbricaria*), while normally found in moist situations, seem perfectly capable of doing well in much drier locations. White oak and red oak (*Q. borealis maxima*) are tolerant of a wide variety of soils.

The foliage and bark patterns of all of the oaks are pleasing, most of them are long-lived, and many have brilliant autumn coloring. They should be planted on wide streets where they will have room to develop their massive growth.

In this list sugar maple (*Acer saccharum*) and red maple (*A. rubrum*) should be mentioned as trees that deserve to be used more freely than they are. Like the oaks, these trees are unable to endure city smoke, but the splendor of the autumn foliage, their quality as shade producers, and their symmetrical form should recommend them for use wherever the conditions are not too adverse.

There are few things, in the long run, that will contribute more to civic pride than a city whose avenues are lined with magnificent trees.

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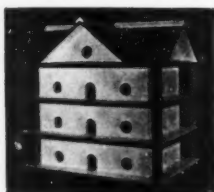
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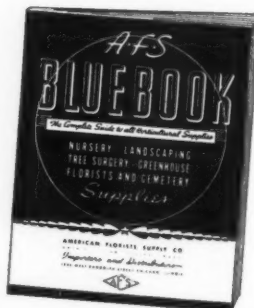
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AROUND THE STATES

ACCORDING to preliminary estimates released by the Department of Commerce, lumber production in 1939 increased more than fifteen per cent over 1938—the total cut for the nation amounting to approximately 25,000,000,000 board feet. Louisiana was the top-ranking hardwood lumber producing state, while Alabama led in the production of yellow pine, with Texas, Mississippi and Arkansas following in the order named.

New Jersey Acquires New Forests

Local municipalities in New Jersey are transferring approximately 100,000 acres of tax delinquent land to the state for administration as state forests by the State Department of Conservation and Development. This is possible under the terms of a law enacted in 1940 by the state legislature which permits the transfer of such lands without liquidation of back tax obligations or any payment from the state. The lands involved are wasteland areas in the south Jersey coastal plain pine region on which taxes have been delinquent in most cases for many years, and on which the local municipalities have had to pay both county and state taxes annually. Under the terms of the new law municipalities will not only be relieved of these annual tax payments but hereafter will receive from the state a ten cents per acre tax lieu payment each year.

Wildlife Program for Indiana

Inauguration of a statewide wildlife restoration program in Indiana in which landowners, conservation clubs and the state will cooperate for the next four years, was announced on January 13 by Virgil M. Simmons, commissioner of the Department of Conservation.

The program provides for the establishment of two to ten-acre tracts of uncultivated land which will be developed as

feeding and nesting areas for birds, rabbits, squirrels and small furbearing animals. The program will be financed co-operatively—one-fourth provided by the State Division of Fish and Game and three-fourths provided by the federal Fish and Wildlife Service from Indiana's share of funds available under the Pittman-Robertson Act.

This restoration program will supplement the statewide wildlife survey which was started six months ago under a similar cooperative agreement. This survey, in which Purdue University is also co-operating, is to compile data on wildlife conditions and wildlife populations under existing land-use and agricultural practices.

Under the new program, the conservation clubs will secure agreements from landowners for the use of designated tracts of land over a five-year period and renewable for a second five years. Materials for fencing and planting the tract will be furnished from project funds with the labor provided by the clubs. One-third of the selected area will be planted in wildlife producing grains and plants; another third will be planted with tree and shrub transplants; the remainder will be left unplanted as a nesting area. Each area will be closed to hunting as a wildlife and escape area.

Seek End of Plumage Traffic

A joint declaration of policy and program providing for the permanent cessation of traffic in any wild bird plumage for any purpose whatever, including millinery and decorative use, was made public February 10 by the National Audubon Society and the Feather Industries of America, Inc.

The statement, which has been signed by officials of both groups, calls for a co-operative program, believed to be in the best interests of conservation, including joint advocacy of more stringent and comprehensive legislation by the national and all forty-eight state governments.

Representatives and members of the feather industry signing the declaration of policy declare that they believe they collectively constitute at least ninety per cent of all the manufacturers, dealers and jobbers in wild bird plumage in the United States and own, control or possess at least ninety per cent of all current inventories of such wild bird plumage.

According to the provisions of the statement, members of the feather industry, upon compliance with new legislation in New York, would be permitted for a period of six years, to dispose of certain portions of their present inventories of wild bird plumage, with the understanding that no additions are to be made to the aggregate inventories of the industry.

Florida's New Forester

On January 14, the Florida Board of Forestry announced the appointment of H. J. Malsberger as state forester and park executive. He succeeds Harry Lee Baker, who resigned in July of 1940.

A graduate of the Pennsylvania State College of Forestry, Mr. Malsberger be-



H. J. Malsberger
New State Forester of Florida

came associated with the Florida Forest and Park Service in 1928, serving as district forester, assistant state forester in charge of forests and parks, and, for the past six months, as acting state forester.

Sweeping Changes in Georgia

Immediately after his inauguration on January 14, Governor Eugene Talmadge of Georgia made sweeping changes in the personnel of the state conservation departments. Zack Cravey, former commissioner of the Game and Fish Department under the last Talmadge administration, was named commissioner of Natural Resources, replacing Charles Newton Elliott; Walter Dyal, of McRae, a turpentine operator, was appointed state forester to succeed W. C. Hammerle; R. F. Burch, Jr., former commissioner of Natural Resources, was named director of the Division of State Parks, replacing Eugene L. Bothwell.

Throughout these various units of the Georgia conservation department further replacements were made, despite a merit system which has been in existence for a number of years. Late in January it was reported that all but three of the ninety employees of the Wildlife Division had been ousted, and of the thirty State Park employees, all but two had been replaced.

Fourth Wildlife Week

The week of April 14-19 has been selected as National Wildlife Restoration Week and will be used to call the attention of the American people to the need for conserving our natural resources, officials of the National Wildlife Federation have announced.

Congress

(Continued from page 130)

of a merger of CCC and NYA appear to have emanated primarily from recommendations from the American Youth Commission, an independent, non-governmental agency of the American Council on Education. After a three year study of CCC camps, the committee recently made public its report, favorable in many and critical in other respects of the organization and operation of the Corps. The commission concludes with the recommendation "that the CCC and NYA should be consolidated in a single new youth service which would continue the work programs now carried on by CCC and NYA, and any other work projects for youth that may be found appropriate." Should efforts be made to merge these two agencies, another inter-governmental controversy may be in the making as the two agencies do not always see eye to eye.

There are also prospects of a legislative fight if and when the bill introduced in the last session of Congress by Congressman Johnson of California is re-introduced. This bill relates to grazing on the national forests and would provide legal status for boards organized by local stockmen who use the national forests for grazing. The bill was commented on editorially in a 1940 issue of AMERICAN FORESTS and there analyzed as a step towards establishing vested rights for those who have enjoyed the privilege of grazing their stock in the national forests. During the week of February 10, a group of western stockmen was in Washington seeking to determine whether or not this legislation will again be pressed.

New bills of special conservation interest introduced since the last issue of this magazine are listed in the Conservation Calendar on page 131.

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Pulpwood Association Expands Program

A PROGRAM featuring expansion of field demonstrations showing landowners the proper way to harvest timber, cooperation between pulp mills and timberland owners in the reforestation of idle lands, and a broad campaign of conservation education was adopted for 1941 by the Southern Pulpwood Conservation Association at its second annual meeting at Atlanta, Georgia, January 23 and 24.

Frank Heyward, Jr., general manager of the association, brought out that field demonstrations have proven so effective as a means of inducing landowners to employ sound methods of harvesting timber that a broad expansion of this program is essential to good conservation practices in the South. This was supported by J. H. Allen, of the Florida Pulp and Paper Company, retiring president of the association, who further called attention to the need for conservative harvesting in the South by pointing to the present demand for low grade lumber in the national defense program. "Millions of feet of small logs are being cut and hauled to sawmills all over the South," he said, "at a faster rate and in greater volume than at any time since 1918."

Speaking of the relation between the farmer and the pulp mill, Marlin H. Bruner, extension forester of South Carolina, stated that the conservation work of the association has already brought about

better pulpwood cutting practices. Operating in South Carolina, he said, are four mills which have employed technically trained foresters to encourage better cutting practices among the pulpwood producers.

K. S. Trowbridge, of the Brunswick Pulp and Paper Company, gave a highly illuminating talk on the adaptability of tractor logging for pulpwood. He pointed out that one of the features of tractor logging is the ease with which various products such as pulpwood, sawlogs, and poles can be handled in connection with an operation based on integrated production.

E. A. Sterling, discussing the movement towards public regulation of privately owned timber, said in part: "What rubs many otherwise tractable citizens the wrong way is the growing encroachment on the fundamental liberties and private rights of the individual. It happens that many of those who don't like it are the same folks who pay most of the taxes and hire most of the labor. These folks also have the privilege of paying for what is grandly called a system of national forest economy."

W. J. Damtoft, of Canton, North Carolina, assistant secretary of the Champion Paper and Fibre Company, was elected president of the association to succeed J. H. Allen.

Conservation in Southern California

(Continuing from page 124)

small species of plants, however, performing all the functions of a true forest. At the same time, the problem of providing adequate protection from fire has been most critical in the area due to a high fire hazard and to low humidity. But the area is fortunate in having to deal with the problem not only the United States Forest Service but what is probably the most highly developed county forestry department to be found in the nation. This latter organization, the Los Angeles County Department of Forester and Fire Warden, operates in the area generally below 3,000 feet in elevation and immediately adjacent to highly developed urban and agricultural lands. Its annual budget probably exceeds the budgets of many state forestry departments.

The watershed fire protection problem in the Los Angeles area is probably the most difficult to solve of any similar problem elsewhere in the world. In addition to a season of extreme fire hazard, which ranges from eight to twelve months of the year, there are the risks of extensive forest patronage—risks which probably no other watershed in the country has to such a degree. Not only are the watersheds used by the casual picnicker and those spending a greater period of time in the available mountain camp grounds and parks, but there is also a considerable number of

structures used principally as permanent places of habitation. In one area of 107,000 acres, there are in excess of 5,000 such structures.

According to Joseph J. Davis, chief assistant for the Department, the ever increasing number of structures in these forest or watershed areas not only adds to the fire risk, but complicates the technique of forest fire control. Fire control strategy must contemplate not only control with a minimum of acreage burned, but also the placement of men and equipment to safeguard structures in the zone of operation.

In meeting this unique problem, Mr. Davis pointed out, the Department and the federal Forest Service have correlated and arranged various projects which will, in time, bring about a unified coverage of all watersheds in the area. One of the first of these has been the establishment of a primary fire lookout system. Furthermore, the Department of County Forester and Fire Warden has divided its jurisdictional area into field divisions which correspond to the Forest Service ranger districts, and therein has erected and is maintaining division headquarters, patrol stations, lookout towers and other essential features. On a cooperative agreement, both the county and the Forest Service respond to any fire that occurs within zones that

(Continuing on page 141)

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SCIENCE AND EQUIPMENT

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National Park Service aviators soon will hover over treetops, lakes and streams of the country's national parks in their endless search for forest fires and lost persons.

Parkmen will use two autogiros recently transferred from the War Department which no longer needs that type of plane in its air defense program.

The two 225-horsepower autogiros will be used principally in scouting for fires which occur in "blind spots," beyond the range of lookout towers, the Park Service said.

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STATIC PARACHUTE CORD

A new device perfected by two Forest Service parachute jumpers may make "bailing out" of an airplane safer.

Chester Derry and his brother, Frank Derry, have invented a static cord. One end is attached to the airplane, the other to the ripcord of a parachute. When the jumper leaves the plane the static line operates the ripcord and all the jumper has to do is float to earth. The device is being patented by the Forest Service.

FOREST FIRE WIND TUNNEL

A wind tunnel, like those used by aviation engineers, has been built at the California Forest and Range Experiment Station for the study of forest fire conditions.

No effort is made to attain the wind velocities commonly reached in the wind tunnels used in aviation research, for

these hurricane air speeds have little significance in connection with forest fires. Velocities below fifteen miles an hour have been found sufficient for all practical purposes.

A number of other research problems in forestry, outside the field of fire investigation, have been suggested for further use of the tunnel. These include effect of ground cover on wind erosion, evaporation of moisture from soil surfaces, efficiency of various types of windbreaks, distribution of tree seeds and migration of insect pests.

COULEE "DEFROSTERS"

Mammoth "defrosters," probably the largest in the world, are being installed at Grand Coulee Dam, where more than nine miles of electric heating cable and nearly an acre of steel plates are being placed along the top of the spillway section to insure proper winter operation.

One of the unusual features of the giant project nearing completion by the Bureau of Reclamation, this gigantic heating apparatus will prevent ice formation which might freeze tight the eleven huge drum gates along the dam's 1,650-foot overflow spillway. The gates control the flow of the Columbia River over the dam. During freezing weather the ends of the gates would probably stick to the spillway piers, or an icy bond might form where they rest on their steel seats. Placing the steel plates in the spillway and heating them will prevent this.

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Protex is referred to in "Cinderella Boulevards" by Juliett K. Arthur. See page 108



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AUDUBON'S AMERICA, edited by Donald Culross Peattie. Published by Houghton Mifflin Company, Boston, Massachusetts. 328 pages. Illustrated. Price, \$6.00.

While the frontier of North American civilization was pushing westward down the Ohio and across the Mississippi to the Great Plains, and while this continent was still a land of primitive forests, John James Audubon was traveling here and recording what he saw. He journeyed as far west as Fort Union in what is now North Dakota, as far south as the Florida Keys, and as far north as Newfoundland. He hiked the cane breaks of Kentucky, traversed the bayous of Louisiana, and sailed beneath the cliffs of Bird Rocks in the Gulf of St. Lawrence, and in his wanderings resided and hunted with the rugged pioneer and the wealthy, cultured plantation owner alike.

Throughout his travels his interest in ornithology and his ability to paint pictures of the birds he found were driving forces, and today the name of Audubon the artist-naturalist is a byword among both nature-lovers and artists. But Audubon the narrator is little known.

"Audubon's America" is a collection of narratives written in his own words about his adventures. In them he entertainingly tells of the America of his day, and the numerous episodes of his experience give an intimate picture of life in the eighteen hundreds.

Illustrated with seventeen color reproductions of Audubon's paintings including a self-portrait, the book is edited by Donald Culross Peattie, himself an Audubon biographer and well known naturalist. Giving first a comment on what Audubon knew, Peattie follows this with a brief biographical sketch, and each of Audubon's accounts he introduces with a few explanatory paragraphs on circumstances pertaining to the writing.

Here, indeed, is a book of wide interest, for it will appeal to the naturalist, the nature-lover, the artist, and the historian.

THIRTY YEARS OF SCOUTING, published by the Boy Scouts of America, 2 Park Avenue, New York City. Extracts from the proceedings of the 30th Annual Meeting of the National Council, presenting a picture of Scouting as it affects the life of America today. 168 pages, illustrated. Price 25 cents.

WILDLIFE CONSERVATION, by Ira N. Gabrielson. Published by The Macmillan Company, New York City. 250 pages. Illustrated. Price \$3.50.

Without complicated explanations and terms, this is a book that will be of interest to anyone who is interested in saving wildlife. In the first few pages there is a concise but thorough discussion of the chemistry and biology of plant and animal life showing the interrelationship between forms of life, and their dependence upon sun, air, soil, and water. Following are several chapters which deal with the con-

NEW BOOKS and OTHER PUBLICATIONS

A list of Selected Books on Forestry and related fields of Conservation is available to members of The American Forestry Association on request.

servation of soil, forests, and water, proving the necessity of restoring and saving these resources which comprise the habitat of wildlife.

Throughout the second half of the book the author not only gives a vivid picture of the history of wildlife since the coming of civilization to our continent describing the ruthless destruction of species, but also gives an up-to-the-minute account of the progress that is being made to restore these species, most particularly the ones whose numbers have declined nearly to the point of extinction.

Though there is much good news for nature-lover and sportsman alike, the author expresses no great sense of optimism, and states that the most uncertain factor is public support of an effective plan, and that America, now facing the task of staying tirelessly on the job, must put to work in restoration natural forces, if success is to be achieved.

GERMAN FORESTS—TREASURES OF A NATION, by Dr. Adalbert Ebner. Published by German Library of Information, New York City. 127 pages, illustrated.

Written in simple language easily understood by the layman, this book deals with forest conservation in Germany, giving a thorough resume of the example set by that country in managing state, private, and community forests.

NAVAJO NATIVE DYES—Their Preparation and Use, compiled by Stella Young and edited by Willard J. Beatty. Published by the U. S. Office of Indian Affairs, Washington, D. C., price, 50 cents.

An extremely interesting study and exposition of the origin of this work by the Navajos, from recipes formulated by Nabab G. Bryan, and illustrated with drawings by Charles Keatsie Shirley, both native Navajos.

The publications listed below must be ordered direct from the addresses as given and not through the Association.

Improvement Cuttings in the Bottomland Hardwood Forests of Mississippi, by J. A. Putnam and Henry Bull. Occasional Paper 93, and **Pulpwood and Log Production Costs As Affected by Types of Road**, by R. R. Reynolds. Occasional Paper 96. Sou. For. Exp. Sta., New Orleans, La.

Pacific Northwest Problems and Materials. Northwest Regional Council, Beldell Building, Portland, Ore. Price 30 cents.

Hunting the White-tailed Deer, by B. F. Ederer, University of Minnesota Press, Minneapolis, Minn. Price \$1.00.

Woodland Management, by J. Alfred Hall. Bulletin 213 of the Agr. Ext. Service, Ohio State Univ., Columbus, Ohio.

Forest Resources of the Piedmont Region of North Carolina, by J. W. Cruikshank. For. Survey Prog. Report, Release No. 6. Appalachian For. Exp. Sta., Asheville, N. C.

The Control of Erosion in New York, by A. F. Gustafson. Cornell Ext. Bull. 438, and **Dutch Elm Disease and Its Control**, by D. S. Welch and D. L. Collins, Cornell Ext. Bull. 437, N. Y. State Col. of Agr., Cornell Univ., Ithaca, N. Y.

Service Life of Untreated Juniper and Cypress Fence Posts in Arizona, by George S. Meagher. Report N. 2, S. W. For. and Range Exp. Sta., Tucson, Arizona.

A Selected Bibliography of North American Forestry, Vol. 1, by E. N. Munns. For. Serv., U. S. Dept. of Agr., Misc. Pub. No. 364. Supt. of Docs., Wash., D. C. Price 75 cents.

Now They Are Men, by James J. McEntee. Published by the National Home Library Foundation, 1212 St. Matthews Court, Washington, D. C. Price, 25 cents.

Forest Resources of Medina County, Ohio, by Erwin A. Loew. Forestry Pub. No. 69, Ohio Agr. Expt. Sta., Wooster, Ohio.

The Economic Effects of the Federal Public Works Expenditures, 1933-1938. Prepared for the National Resources Planning Board by J. K. Galbraith and G. G. Johnson, Jr., Supt. of Docs., Wash., D. C. Price 25 cents.

Footprints of the Trojan House, published by the Citizenship Educational Service, Inc., 122 East 42nd Street, New York City. Single copies 25 cents—may be had in large orders at lower rate.

The Grazing Bulletin. Published by the Grazing Service, Department of the Interior, Washington, D. C.

Windbreaks for Illinois Farmsteads, by J. E. Davis. Circ. 38, Illinois Natural History Survey Division, Urbana, Illinois.

Conservation in Southern California

(Continuing from page 138)

threaten the jurisdictional area of either service. Because of the lack of running streams, living springs and other sources of water, it has been necessary to devise fire tank apparatus that will convey water to the fire, necessitating truck trails as arteries of ingress. Since 1929, both the Forest Service and the Department have planned and developed fire tank apparatus until now it is believed the finest designs are to be found here. The adoption of this type of equipment has made essential the construction of water catchment basins, storage reservoirs and tanks for the storage of water to replace the tank truck supply.

Mr. Davis further explains that while the Department has been developing its fire protection system it has not overlooked the need of restoring burned over areas. Through its forestry division it has conscientiously seeded all fire burns, and through planting and mechanical means, made every effort to stabilize slopes both on the mountainsides and on fills occasioned by truck trail or highway construction.

Since watershed management plays such a vital part in the very existence of the Los Angeles area, it is only natural that one of the foremost research and experimental stations in the nation has been developed there. Under the administration of the Federal Forest Service, the San Dimas Experimental Station, located in the Sierra Madre Mountains, has over a long period of years developed the technique and science now being applied to the Los Angeles area as well as similar areas in Southern California.

For example, on its 17,000-acre experimental forest, the station not only has made great progress in determining the exact measurements of rainfall and streamflow on mountain drainage basins, particularly streams heavily laden with silt and debris, but it has likewise developed a technique for training mountain streams to follow their designated courses with a minimum of damage to the stream bed itself—that is, a lessening of the destructive cutting and erosive power of water. This training of the streams is a new philosophy in the field of water conservation, but so successful has it proved that the technique is being applied to the vast flood control program in the Los Angeles area. As to the new principles developed at San Dimas for measuring the flow of silt laden streams, these have been definitely accepted by engineers not only in South-

ern California but in other sections of the country as well.

The water yielding capacity of various types of vegetative cover has been determined on the San Dimas Forest. This is particularly true on slopes that have been burned over, although, of course, it naturally applies to unburned areas also. The amount of run-off under different conditions and stages of burning has been determined and treatments have been devised to gain the maximum of water infiltration under these various conditions and stages. Studies have even been made to show what happens to the water when infiltration begins, and these deep seepage experiments are among the most interesting made at the station. Of course there are many other revealing and highly important projects under development at San Dimas, not the least of which is road bank erosion control which has reached such a stage of perfection that the technique is already being applied throughout the nation. But these developments, and many others, will be explored in full by those attending the Los Angeles meeting.

There may also be found some very interesting experiments at the California Institute of Technology where studies are being made of wind erosion with an artificial wind tunnel where velocities of wind as high as fifty miles an hour are tested against miniature wind breaks. Water erosion is likewise studied. And strangely enough, it is being found that the performance of wind and water are almost identical in their laws.

There are, of course, many other phases of forestry and conservation to be explored by those attending the meeting, among the most important of which is forest recreation. In Southern California, and particularly in the Los Angeles area, there has been developed the most intensive recreational use of the national forests to be seen anywhere in the country. This phase of forestry will be given the important place it deserves on the convention program.

So, with this brief and necessarily limited picture of conservation in Southern California it is sincerely and earnestly hoped that conservationists everywhere will join with members of The American Forestry Association in making this first annual meeting on the Pacific Coast not only a memorable one but one that will prove a milestone in the forward march of American conservation.

Needless to say, we of the West Coast will do everything we can to make it so.

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Director of the United States Fish and Wildlife Service

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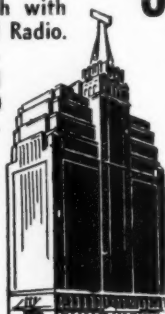
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The Pine That Isn't a Pine

(Continued from page 120)

Australian pine in Tahiti and other Polynesian islands. There, war weapons, tapa beaters, spears, and clubs are made from this wood. The bark of the tree contains a yellow dye which is used by the Malays to dye wool and silk and by the Madras fishermen to dye their nets. The bark itself is a tonic and astringent and finds medicinal use.

In the Australian pine, the sub-trop-

ical regions of the United States possess a species that will grow faster on some of the poorest sites than our best native species do on the most favorable sites. It is valuable, not only as a timber producer, but also as an ornamental and as a windbreak. One of the few proven exotics in this country, it may truly be said to be one of our forest trees of the future.

Cinderella Boulevards

(Continued from page 110)

estimated at \$15,000; the minimum for each tree is \$60 in places where there is only earth below the sidewalk and moisture can be carried off by subsoil drainage. However, the St. Moritz Hotel spent \$800 apiece for trees brought two hundred miles from Pennsylvania nurseries and sunk into its subterranean cellar; Lewis & Conger, a few blocks away, have planted just one tree, at a cost of \$400. They had to block off part of their undersidewalk vault, hitherto used for storage.

At one time persons interested in planting trees in New York were discouraged by red tape. Several kinds of permits were required and bond had to be posted to cover possible injuries due to planting. But thanks to Park Commissioner Moses, whose dynamic methods are changing the face of New York, a special bureau which

serves would-be street planters was set up in 1937. Under the direction of Anthony V. Grande, veteran landscape gardener, the new bureau provides all required permits free of charge. It obtains the necessary permit from each borough president to cut a hole in the sidewalk, satisfies the police and fire departments as to suitability of location, and gives advice on kinds of planting and submits a list of nursery owners and contractors approved by the Park Department.

Mr. Grande does not especially encourage \$1,000 trees such as those planted on Fifth Avenue; he prefers that owners set out young ones, from two to four inches in diameter. They are far less expensive and it is easier to prepare their pits and the top-soil. The department approves an arrangement of granite blocks set far enough apart to permit moisture to enter; even if grass grows between the chinks water can ooze through to the roots.

Those interested in beautifying barren sidewalks are encouraged to form neighborhood groups or block committees; one of the first to be formed was that of the tenants living in exclusive Sutton Place, who set out twenty-five ginkgo trees three inches in diameter. The Twenty-third Street Association promptly followed suit with trees in the Gramercy Park section.

Casual visitors to New York are in the habit of characterizing it carelessly as a "treeless town." Actually the steady campaigning in the four years since the present administration has been in the saddle has resulted in a hundred per cent increase in the number of trees planted on side streets. Meanwhile, in addition to a million trees making shady walks in five boroughs, there are a million and a half in parks, with nearly two hundred and forty climbers and pruners busy trimming and spraying them.

With the Hudson River and East River drives tree-bordered, with the Board of Education planting trees in front of City College, and trees around the parking lot which was once the site of the world-famous Hippodrome, New York is beginning at last to resemble that place of ultimate happiness described in the Apocalypse as a "City in the midst of which are trees of life on this side and on that of the river of water flowing through it."

Financial Statement

The American Forestry Association

BALANCE SHEET AS OF DECEMBER 31, 1940

ASSETS		LIABILITIES AND CAPITAL	
Cash	\$12,130.22	Accounts Payable	\$2,817.28
General Fund Investments	9,100.00	Loans from Reserve Fund	4,200.00
Accounts Receivable	2,133.28	Deferred Income	8.00
Accrued Interest Receivable	2,402.94	Reserves for Prepaid Memberships	27,084.14
Inventories	4,522.84	Surplus	292,876.04
Deferred Charges	2,348.45		
Special Revolving Fund	9,360.00		
Endowment Fund (Including Real Estate)	282,066.02		
Furniture and Fixtures	2,921.71		
TOTAL	\$326,985.46	TOTAL	\$326,985.46

INCOME AND EXPENSE ACCOUNT FOR YEAR ENDED DECEMBER 31, 1940

EXPENSES		INCOME	
General Administration	\$24,608.20	Membership Dues	\$52,784.89
AMERICAN FORESTS Magazine	32,949.05	Advertising	13,533.40
CONSERVATION Magazine	1,730.07	Interest	6,046.74
Membership	16,689.41	Donations	1,705.49
Forester's Office	4,075.22	Forester's Office	2,881.34
Educational Publicity	4,969.97	Miscellaneous	5,699.44
Operating Surplus	5,914.11	Sale of Publications	5,408.96
		CONSERVATION Magazine	2,875.77
TOTAL	\$90,936.03	TOTAL	\$90,936.03

AS TRUSTEE FOR AMERICAN FOREST FIRE MEDAL PROJECT

Expenses	\$141.00	Receipts	\$165.72
Total Balance this Fund December 31, 1940			\$2,570.85

Minnesota Plan

(Continued from page 113)

pine tops and slash by piling and burning.

Foresters realize more keenly than the average citizen that all trees in time will die or be destroyed by wind, insects, or disease, if not by fire. The losses in timber become increasingly severe as the stand grows older. Finally, only a few of the more sturdy veterans remain. There is nothing static about living trees. Although the span of life for red or Norway pine and for white pine may in individual cases reach 300 years, yet these ancient groves will ultimately disappear and must be replaced by young seedlings and saplings or our park scenery will not endure. The magnificent groves of Norway pine on the eastern shore of Cass Lake which were reserved in 1902, were then from 180 to 300 years old. In the 40-year period since that date these stands had already suffered severe natural losses. But on the night of July 24, 1940, a rain and wind storm of unusual severity swept across a belt thirty miles wide and left ruin in its wake. From twenty-five to seventy-five per cent of the great trees were either blown down or broken off and the groves lost for all time the natural beauty of the former serried ranks of red-boled trees with canopy lifted far above the earth; a catastrophe, but one which is almost certain to occur in the life span of 300 years. Young and vigorous stands and trees less than a century in age were not injured by this wind despite its severity.

Meanwhile as the result of the seed trees left on the cut-over lands, great areas of young pine have been established, some of which are already nearly forty years old. The openings left in the park timber are well stocked with young trees which will now grow rapidly. In time, and after the last of these veterans are removed by the grim processes of nature, the people of the State and region can look forward to a time when this original glory will be restored.

This Minnesota plan was early incorporated in the practices of the U. S. Forest Service, where on all waterways, roads and scenic trails, bands and strips of timber are left of ample width to protect scenic values for all who visit the areas. In the region between Lake Superior and Canada the Superior National Forest forms a huge wilderness area, in which no cutting of timber is permitted along the shores of lakes and streams, which are the only portions of that great area used by recreationists. As on the Chippewa National Forest, the timber inaccessible to the traveler can be sold and cut by forestry methods, insuring its reproduction and renewal for future generations.

This principle guided the acquisition and development of the eastern national forests. In the White Mountains despite their superlative scenic value, New England sentiment approved of their creation and retention as a national forest rather than a national park, believing

that all interests both economic and recreational can best be served under the policies of utilizing all resources to their fullest extent and for the greatest good of all. Concessions have been made to the sentiment for national parks by the creation of the Great Smokies, the Shenandoah and the small Acadia National Parks, the latter on the coast of Maine. But efforts to create national parks of large extent in Maine, New Hampshire and Vermont have been vigorously resisted by public sentiment in these states.

Recently the Washington State Planning Council has taken a similar position with regard to the newest proposals for greatly extending the national park system in the Cascades. The State has lost the economic use of over five billion board feet of timber in the Olympic Peninsula by segregation of more than 800,000 acres for a wilderness park. Had the Minnesota Plan found favor with Congress when this proposal was made, public recreational interests could have been adequately and permanently protected with the reservation of a small fraction of this vast resource.

Our nation has so far felt that it could afford the luxury of permanent reservation and protection from all commercial uses of the great system of national parks. Faced by a changing world economy we should take stock of our remaining resources. If through application of the principles which have proved successful after forty years of trial in Minnesota and elsewhere we can have our cake and eat it too, let us consider carefully each new proposal for further extension of our park system as such.

DOERR NAMED PARK NATURALIST

Appointment of John E. Doerr, Jr., to the position of chief of the Naturalist Division of the National Park Service has been announced. He will fill the vacancy caused by the resignation of Earl A. Trager. For the past year Mr. Doerr has served as assistant superintendent of the Rocky Mountain National Park, Colorado.



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The Forest of Peter the Great

(Continued from page 105)

in 1921, there were 6,011 stems with a volume of 13,760 cubic meters. Thus the larch stands lost 596 stems through mortality or wind-throw, but gained 3,128 cubic meters through growth.

Since 1921 there have occurred some severe storms which have taken their toll in trees. One, on September 23, 1924, destroyed 634 larch trees. This was the most destructive storm on record at the Forest. By the irony of fate the research staff at the station had felled forty-two of the old larch trees for scientific purposes shortly before the storm. This storm was comparable in its effects to the New England hurricane of 1938, which devastated many old-growth forests held for scientific purposes, such as the College Woods of the University of New Hampshire. It is usually the largest trees which suffer most in a bad storm, and Raivola was no exception.

In so far as the future disposition of the Larch Forest goes, the Finnish foresters, being scientists, laid their own plans for its development with a serene disregard for any factor except the Forest itself. The plans of any higher destinies were therefore undoubtedly unthought of; but it may well be that such plans have already eliminated the Forest from any further consideration.

In the Finnish plan as laid down by the Research Institute, economic forestry considerations had no place in the future handling of the Forest. Since it was one of the oldest examples of forest establishment by planting it would be preserved and maintained for scientific purposes. In general the younger age classes replaced the older trees as they dropped out, continuing the plan which Foekel started in 1738. Suitable sites would continue to be planted to larch. Generally speaking, larch needs much growing space or, as it might be called today, the all-inclusive "Lebensraum"; therefore the smaller openings in the Forest would be filled by those species which might naturally follow larch in the succession. These are species native to the region such as ash, oak, maple, elm, and linden.

Although economic considerations have been without weight in the administration of the Raivola Larch Forest, there has been one source of income, in addition to salvage of dead and down trees, which has not been overlooked. This is in the production of Siberian larch seeds which have been distributed over Finland for new plantations. Stands from this seed also have been established in Japan, Bulgaria and the United States.

The Finnish plans for the future disposition of the Raivola larch stand were very nearly complete. Now, should the Forest still be in existence, the Russian foresters no doubt have resumed their stewardship of the monument established so long ago by Peter the Great when he opened the "Window to Europe."

WHO'S WHO

Among the Authors in This Issue

RICHARD D. STEVENS (*The Forest of Peter the Great*) was born in Colebrook, New Hampshire, studied at the University of New Hampshire and at the Yale School of Forestry and in Stockholm, Sweden, at the Royal Forest Academy as a Fellow of the American-Scandinavian Foundation. He has lately been engaged in hardwood research for the University of Arkansas.

CHARLES NEWTON ELLIOTT (*Is The Passenger Pigeon Still Alive?*)—well known to our readers because of the many interesting articles he has contributed to our columns—proves, by raising this question once again, that hope does "spring eternal in the human breast."

JULIETTA K. ARTHUR (*Cinderella Bouleards*) is a native Oklahoman. Widely travelled, Mrs. Arthur is now free-lancing from New York City.

HERMAN H. CHAPMAN (*The Minnesota Plan*), formerly a director and active in the affairs of The American Forestry Association, is Harman Professor of Forestry at the Yale School of Forestry. Today one of the leading men in his profession, he was associated in its earliest years with the United States Forest Service, and helped substantially in the establishment of the first national forest in the State of Minnesota, where he initiated the movement for proper land classification. An outstanding educator and authority on forest taxation and valuation, Prof. Chapman's best known books are *Forest Finance*, *Forest Mensuration* and *Forest Valuation*.



Herman H. Chapman

NORMAN CLYDE (*To the Last Lake*) is a native Pennsylvanian and a graduate of Geneva College and the University of California. Devoted to outdoor sports and particularly mountaineering, he has perhaps climbed more mountains than anyone else in the North Americas. Living at Big Pine, California, he is a member of the American Alpine Club, the Sierra Club and the California Academy of Sciences.

STEPHEN H. SPURR (*The Pine That Isn't a Pine*) is a Washingtonian. He was graduated from the University of Florida and did graduate work at Yale in 1940. Now employed as technical assistant at the Harvard Forest at Petersham, this article is his first attempt at writing in the non-technical field.

THE COVER—"The Ancient Pine"—Photographed by John Kabel. (See verse by Blanche DeGood Lofton on page 128.)

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grass, forest, camp, building and spot fires QUICKLY and POSITIVELY.

The STATE and FEDERAL FOREST SERVICES and CCC CAMPS carry INDIANS as standard equipment. Clear water under pressure drives into every nook and cranny drenching the fire. Individuals and groups removed from the regular agencies of Fire Protection need INDIANS.

Catalog on request.

Novelties of Real Merit

Pink Abelia

Edward Goucher

A hybrid with bright, clear pink blooms, each flower nearly twice the size of the old type. The leaf is more nearly evergreen and the plant is hardy. Since *Abelia grandiflora* itself was the almost perfect shrub, this new variety is sensational!

(Each) (10)
6 to 12 in. trans. \$1.25 \$11.00

★ ★

Wisteria Praecox

BLOOMS YOUNG

A hybrid of Chinese and Japanese. Clusters are long, yet full, blue in tone. Hardy. Sensational quality is the fact that blooming starts in second or third year!

(Each) (10)
2-yr. grafts \$2.00 \$15.00

★ ★

ALSO—

KELSEY YEW

FRANKLINIA

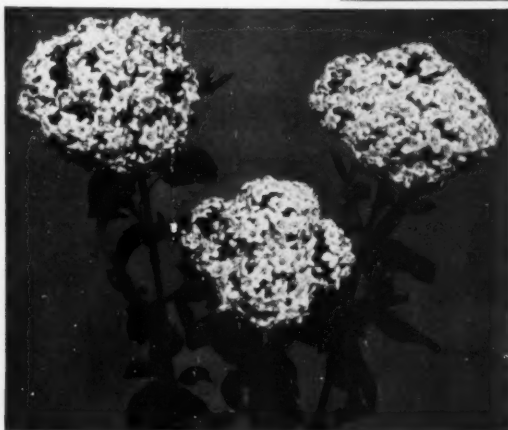
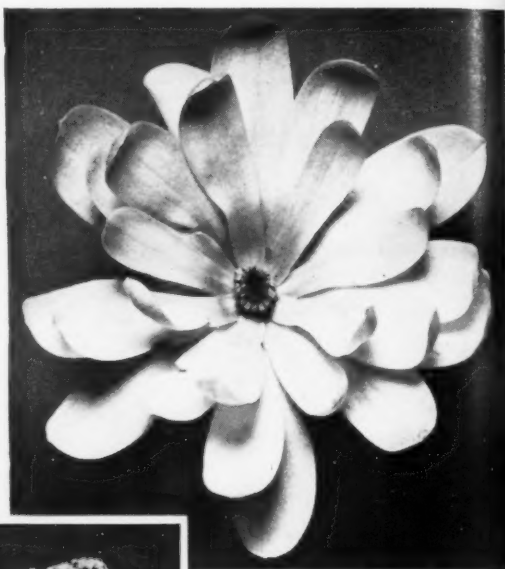
STEWARTIA

LABURNUM, etc.

Magnolia "Waterlily" →

Here is a new "Stellata" Magnolia introduced by us last year. It has every quality to make real lasting garden history. It blooms two weeks later than *M. stellata*. A truly heavy bloomer. The flowers are much fuller than *M. stellata*, and in addition are exquisitely fragrant! The pink reverse petals are showier than the rare form *M. stellata rosea*. Growth is strong, but very bushy; probably to 10 or 12 feet.

(Each) (10)
1-yr. grafts, 8 to 10 in. \$1.75 \$16.50
1½ to 2 ft., B. & B., heavy. 4.50 42.50

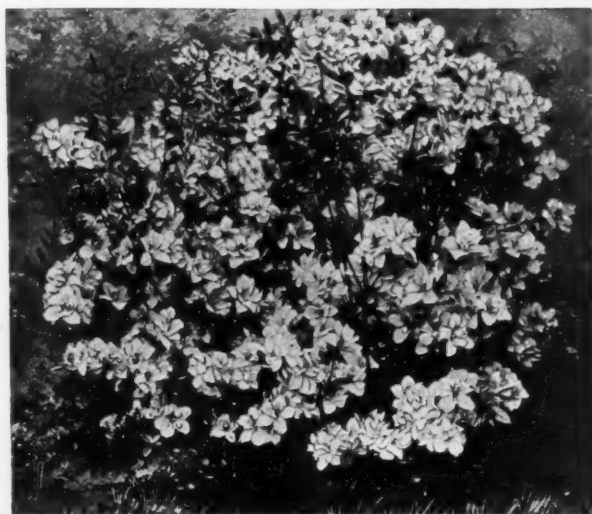


← Viburnum

Burkwoodii

A hybrid introduced from England a few years ago. Lovers of the May-flower Viburnum (*V. Carlesii*) will find here a flower almost identical, more freely produced on a more shapely bush—just as fragrant and waxy bluish. But the leaves are evergreen! Will in time replace *Carlesii*.

(Each) (10)
15- to 18-in. plants \$2.25 \$19.50



Gable's Hardy Hybrid Azaleas

NEW HYBRIDS, the result of a decade's toil by Mr. J. B. Gable. They include some of the hardiest evergreens ever known. Hardy to Boston. We offer one-year old, field-grown, 6 to 8 in. plants in 10 kinds:

Boudoir (SG17). 3 ft., dense, broad. Foliage hid under large blooms, watermelon pink.

Cameroon (97G). 3 ft. Early. Deep mulberry-red. Showy.

Cherokee (30G). 5 ft. Early. A scarlet flash, completely covered with bloom.

Chinook (11G). 4 ft. Early. Double salmon-red. Covered with bloom for long season.

Grenadier (SG3). 3 ft. Broad. Covered with large, single, bright scarlet blooms.

La Lumiere (100G). 4 ft. Compact, evergreen. Early blazing red.

Mary Dalton (111G). 5 ft. Upright. Early, double salmon-red. Like double stars. Very profuse.

Mildred Mae (69G). 3 ft. Broad and shapely. Early; lavender with red spots. This has the best hardy evergreen foliage of all Azaleas.

Miriam (A10G). 5 ft. Profuse; early; deep pink.

Royalty (A27G). 2½ ft. Broad, compact evergreen. Bright purple; double.

PRICE: Any five for \$3.00 (\$50 for 100)

KELSEY'S SHORT GUIDE FOR 1941 points the way to quality Nursery products. Describes about 800 varieties of trees, shrubs, evergreens. Freely illustrated. No other catalog like it. A copy will be mailed on request.

KELSEY NURSERY SERVICE

50-C CHURCH STREET

NEW YORK CITY

